GRUBER & PETTERS SOFTWARE

# gp-Untis *Timetable*

User Manual

GRUBER & PETTERS SOFTWARE

# gp-Untis *Timetable*

## User Manual

(English Version: September 2007)



GRUBER & PETTERS SOFTWARE

A-2000 Stockerau, Belvederegasse 11 • ++43/2266/62241-0 • office@grupet.at • www.grupet.at

# Contents

**FOREWORD ..... 10**

**MASTER DATA ..... 11**

**The All Elements window ..... 12**

Managing the window ..... 12
*Moving rows ..... 13*
*Moving columns ..... 14*
*Sorting data in columns ..... 14*
*Hiding/Showing columns ..... 15*
*Customising the view ..... 16*
*Settings ..... 17*
*Printing ..... 19*
*Entering new elements ..... 19*
*Deleting elements ..... 20*
*Resizing the window ..... 20*
*Time requests ..... 21*
*Special functions ..... 21*
Data input ..... 22
*Entering data using Drag&Drop from the Element-Rollup ..... 22*
*Entering data by selecting from the element list ..... 24*
*Entering element names via the keyboard ..... 25*
*Serial input - selection ..... 25*

**The master data views ..... 26**

Standard views ..... 26
*Window structure ..... 27*
Predefined views ..... 28
*Standard views ..... 28*
*Including views in the menu ..... 30*
Customising existing views ..... 30
*Customising displayed data fields ..... 30*
*Moving columns ..... 31*
*Sorting elements ..... 32*
Creating a new view for teachers ..... 34
Including new views in the menu ..... 35
The queries function ..... 36
*Using the query function ..... 36*
Printing ..... 39
Entering new elements ..... 42

Moving elements ..... 43
Deleting elements ..... 44
Changing element names ..... 44
Data exchange via the clipboard ..... 45
The tool bar functions ..... 46

**Master data properties ..... 53**

Element/independent input fields ..... 53
*Editable fields ..... 53*
*Check boxes ..... 54*
Element-specific input fields ..... 56
*Rooms ..... 56*
*Classes ..... 57*
*Teachers ..... 62*
*Subjects ..... 66*
Students ..... 69
Departments ..... 69
Corridors ..... 70
Descriptions ..... 70
Alias Names ..... 70
School Holidays ..... 71
Reasons of absence ..... 71
Display - Master data ..... 71

**LESSONS ..... 72**

**The lesson window ..... 72**

Predefined views ..... 74
Printing ..... 75
Entering lessons ..... 76
*Entering lessons in the grid view ..... 76*
*Entering lessons in the form view ..... 81*
The tool bar functions ..... 83
Input fields ..... 88
*The "Lessons" tab ..... 88*
*The "Timetable" tab ..... 91*
*The "Codes" tab ..... 93*
The clipboard ..... 98
*Programme-internal use ..... 98*
*Data export to external programmes ..... 99*

**Lesson sequences ..... 100**
Fixed (subject) sequence ..... 101
Sequence in a week ..... 102
Simultaneous lessons ..... 103

**Display - Lessons ..... 103**

**Timetable optimisation ..... 105**

**Weighting ..... 106**
The weighting parameters ..... 107
*The "Teachers (1)" tab ..... 107*
*The "Teachers (2)" tab ..... 108*
*Respect the max. and min. number of periods per day for teachers ..... 108*
*The "Classes" tab ..... 109*
*The "Subjects" tab ..... 110*
*The "Main Subjects" tab ..... 111*
*The "Rooms" tab ..... 113*
*The "Period Distribution" tab ..... 114*
*The "Time Requests" tab ..... 116*
General notes ..... 117

**Analysis of input data ..... 119**
CCC-Analysis ..... 119
*The CCC window ..... 121*
*Shortening CCCs ..... 122*
Data analysis ..... 125

**Optimisation ..... 127**
Control data for optimisation ..... 127
*Optimisation process ..... 127*
*Teacher assignment during optimisation ..... 130*
Strategies ..... 132
*Strategy A - Calculate a series of 'n' timetables ..... 132*
*Strategy B - Several series ..... 133*
*Strategy C - Percentage planning ..... 133*
*Strategy D - Percentage planning in several series ..... 134*
The accompanying window ..... 134

**Diagnostics tools ..... 135**
Percentage planning ..... 136
Diagnosis ..... 140
*The selection window ..... 140*

*The details window* ..... *142*
Overall diagnosis ..... 144

**MANUAL TIMETABLING ..... 146**

**Scheduling periods in the timetable ..... 146**

Scheduling periods ..... 146
Locking periods ..... 149
Moving periods ..... 150
Swapping periods ..... 152
Scheduling periods with clashes ..... 152
Allocating rooms ..... 153

**The scheduling timetable ..... 154**

Scheduling periods ..... 155
Locking periods ..... 157
Swapping periods ..... 157
Scheduling periods with conflicts ..... 159
Deleting periods ..... 160
Allocating rooms ..... 160
Undo ..... 163

**The Scheduling Dialogue ..... 164**

The input field ..... 164
*Lesson search ..... 164*
The period details window ..... 164
Period availability ..... 165
*Time requests ..... 165*
*Flags (markers) ..... 166*
*Displaying abbreviated names ..... 167*
*Saving individual settings ..... 168*
*The "Information" tab ..... 168*
The window logic ..... 170
Scheduling periods ..... 172
Deleting periods ..... 174
Schedule periods with clashes ..... 176
*Class clashes ..... 176*
*Teacher and/or room clashes ..... 177*
Moving periods via Drag&Drop ..... 178

Undo ..... 180
Allocating rooms ..... 180
Room swap ..... 180
Displaying alternative rooms ..... 181
Activate new lesson ..... 182
Locking periods ..... 182
Optimisation ..... 182
Assess the active time slot ..... 184
Replacing teachers ..... 185
Display functions ..... 187
*Displaying all teachers of a class ..... 187*
*Displaying all classes, teachers and rooms ..... 187*
*Displaying a second lesson ..... 187*
*Deleting rows ..... 187*
*Displaying lesson colour codes ..... 188*
*Settings ..... 188*
*Displaying arbitrary elements ..... 188*
Shortcut keys ..... 189

**Swapping periods ..... 190**

Swap suggestions ..... 191
Consecutive swaps ..... 193
Chained swaps ..... 196

**Scheduling half periods ..... 199**

Scheduling half periods using the timetable ..... 200
Scheduling half periods using the scheduling dialogue ..... 200
Manually scheduling half periods ..... 203

**TIMETABLE DISPLAY ..... 205**

**Window set-up ..... 205**

Selection window ..... 206
Timetable window ..... 208
Period details window ..... 210

**Timetable interaction ..... 211**

**Timetable Layouts ..... 213**

Predefined layouts ..... 214

**User-defined views ..... 219**
New timetable view ..... 219
Timetable period window ..... 220
Layout 1 ..... 229
Layout 2 ..... 230
School Holidays ..... 234
Font ..... 234
Colour codes ..... 235
Column headings ..... 235
Row headings ..... 236

**Printing ..... 237**
New print view ..... 237
Headings ..... 237
Layout ..... 240
Selecting timetables ..... 241
Details, individual timetables ..... 242
Details, overview timetables ..... 246
Page setup ..... 248
Background ..... 249
Header and footer ..... 250
Several classes on one timetable ..... 251
Timetables in HTML format ..... 252

**Import and export of views ..... 254**

**Using the clipboard ..... 255**

**USER TIPS ..... 257**

**Settings ..... 257**
Time Grid ..... 257
School data ..... 257
Calendar ..... 257
Miscellaneous Settings ..... 258
Licence Data ..... 259

**Time Requests ..... 260**
Specified time requests ..... 260
Unspecified time requests ..... 261
Copying time requests ..... 263

Deleting time requests ..... 263
Core time ..... 264
Colour codes ..... 265

**Lunch breaks ..... 265**

**Couplings ..... 267**

Teacher teams ..... 267
Class couplings ..... 270

**Type-seperated class components ..... 270**

**Class groups ..... 272**

**Room logic ..... 277**

Alternative rooms ..... 278
*Alternative room ring ..... 278*
Room allocation ..... 280
Room capacity ..... 281
*Alternative room chain ..... 281*
Room optimisation ..... 282
Changing home rooms for classes and teachers ..... 287
Off-site rooms ..... 290
*Start time graduation ..... 291*
*Off-site codes ..... 292*

**Main subjects ..... 295**

**Fringe periods and optional subjects ..... 296**

**Subject sequences ..... 297**

Positive subject sequence ..... 297
Negative subject sequence ..... 298

**Class Clash Code (CCC) ..... 299**

**Timetable comparison ..... 301**

**GLOSSARY ..... 307**

**INDEX ..... 311**

# Foreword

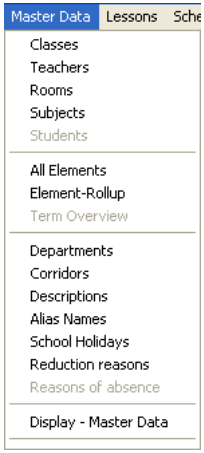
In the course of over 30 years development, the gp-Untis software has grown into a powerful timetabling tool. The sheer number of different functions and options – not to mention the very size of this manual – can therefore appear intimidating to users unfamiliar with the programme.

For this reason, we would recommend that you first study the much more concise manual entitled "Getting Started". With the aid of simple examples, the "Getting Started" manual guides you through the different levels of timetable construction, including programme installation, input of school data, master data and lessons, construction of the timetable using optimisation and diagnosis tools, manual timetabling options and printing the finished timetables for teachers, classes and classrooms.

In principle, this manual covers the same ground, but in much greater detail, and should therefore be regarded as a reference guide rather than an instruction manual.

We would recommend that you use this manual when you come across situations not covered in the "Getting Started" manual or if you want to study the advanced functions of the software to enable you to use the gp-Untis timetabling programme more effectively.

# Master data




This chapter describes the input and maintenance of master data and provides a detailed description of the master data properties.

gp-Untis' master data are basic input details essential for the construction of school timetables. Master data includes the details of teachers, classes, classrooms and subjects which are used to form the lessons in the timetable, but also other important information such as holiday dates and data on departments and alternative rooms. You can enter new master data or modify existing master data via the menu item "Master Data" in the main tool bar (by clicking on the appropriate submenu).

**Note**

Greyed-out items such as the menu item "Students" in the figure above refer to optional functions that are currently inactive. This is usually the case when the use of the option requires the correct licence details of an additional gp-Untis software module. For example, use of the "Students" function requires the purchase and installation of the *Student Timetable* or the *Course Planning* module.

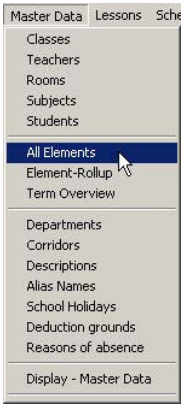
**Note**

The example above contains a number of entries (below the menu item "Display – Master Data") not included in the default display of the standard software package. The chapter "Master data views" describes how to customise menus and include the items you require.

The master data categories "Classes", "Teachers", "Rooms" and "Subjects" are particularly important as they are the main building blocks for the construction of the lessons. We therefore refer to these types of master data as *elements*.

All master data are managed in so-called views. Views are windows designed for the input of new master data and the maintenance (i.e. modification) of existing master data. All master data views are essentially very similar in use and structure. The following chapter describes the similarities between different master data views.

In this context, another important window for managing elements should be introduced first.




## The All Elements window

The All Elements window enables you to manage all the different master data elements, i.e. classes, teachers, rooms and subjects (and students when using the *Course Planning* or the *Student Timetable* module) in a single window.

### Managing the window

The following pages provide an overview of the window and its management, using the demo file as an example.

- Start the gp-Untis software and load the file *demo.gpn*.

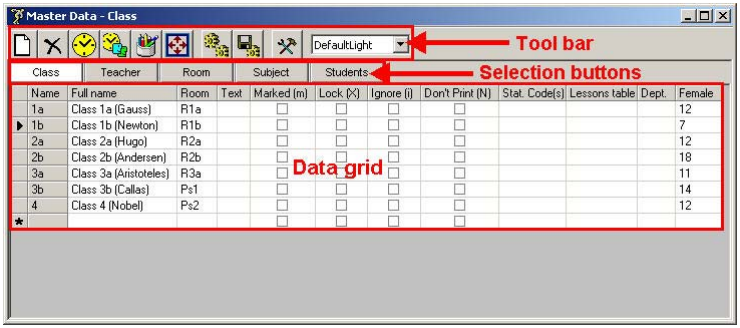
**Note**

You will find the demo files under C:\Program Files\gp-Untis. Each demo file contains a different set of pre-entered licence data and school data.

- For purposes of clarity, close all open windows (either via the menu option "Windows | Close All Windows" or by pressing the shortcut keys Ctrl - K on the keyboard.

**The All Elements window**

- Open the All Elements window via the menu option "Master Data | All Elements".




The All Elements window consists of three components: the tool bar, the selection buttons and the data grid (see figure).

The functions of the tool bar are described in greater detail in a later chapter.

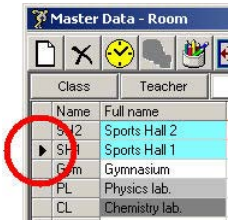
Use the selection buttons to switch between the elements Class, Teacher, Room, Subject and Student in the data grid. Once you have selected the desired element, you can modify the master data for the element or add new master data.

The demo file already contains some master data which you will see displayed in the grid. The following section describes how to use and manage the grid.

## Moving rows

You can move individual data sets in the grid by simple Drag&Drop.

**The row marker**

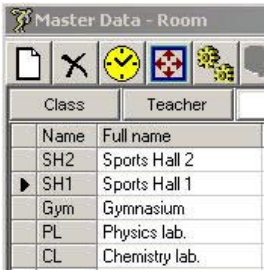



- Click on the row you want to move. The row marker appears in the first (grey) cell of the row.
- Click on the row marker, hold down the left mouse button and drag the row to the desired position. A horizontal line shows the position of the row during Drag&Drop.
- Drop the row in the desired position by releasing the mouse button.









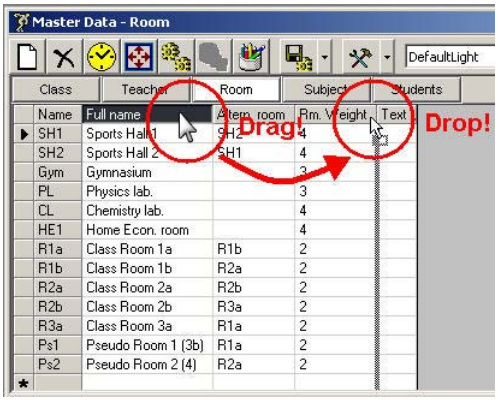
## Moving columns

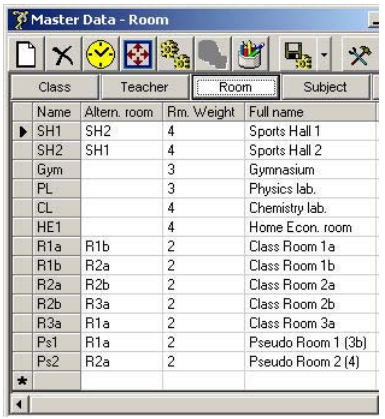
Change the order of columns using the same method.

**Example**

You want to move the column "Full Name" to the right of the column "Room Weighting".

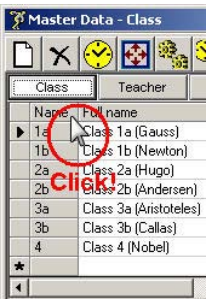
- Click on the heading of the column you want to move and keep the left mouse button held down.
- Drag the column to the desired position in the grid. A vertical line shows the position of the column during Drag&Drop.
- Drop the column in the desired position by releasing the mouse button.




## Sorting data in columns

- Sort the data in a column by clicking on the heading in the column you wish to sort.
- Click again and the data in the column will be sorted in descending order.



Please note that sorting only has a temporary effect. After closing and re-opening the window, the data will again be sorted in the original order.

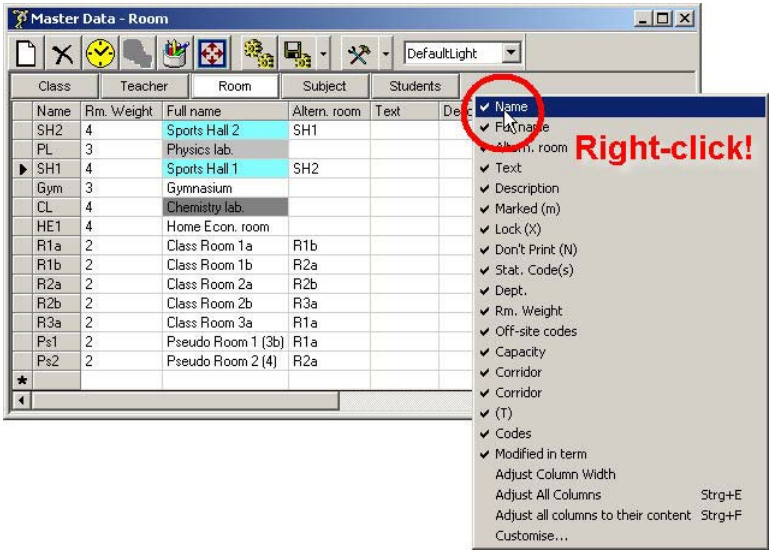
**Note**

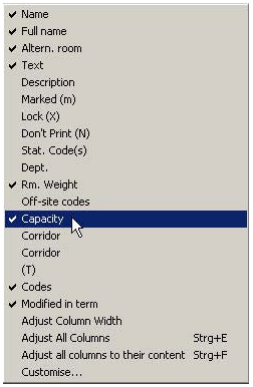
Printouts show the sort order displayed on the screen at the time of printing.

## Hiding/Showing columns

You can hide or show individual columns in the grid.

- Place the cursor in the selection button row, i.e. between tool bar and data grid.
- Right-click to call up the context menu.



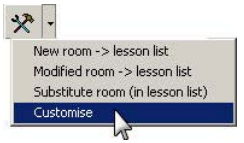

Use this menu to hide or show individual columns by ticking the items you want to display.






## Customising the view

The <Customise> function allows you to change the settings of the Master Data window to suit your personal preferences.



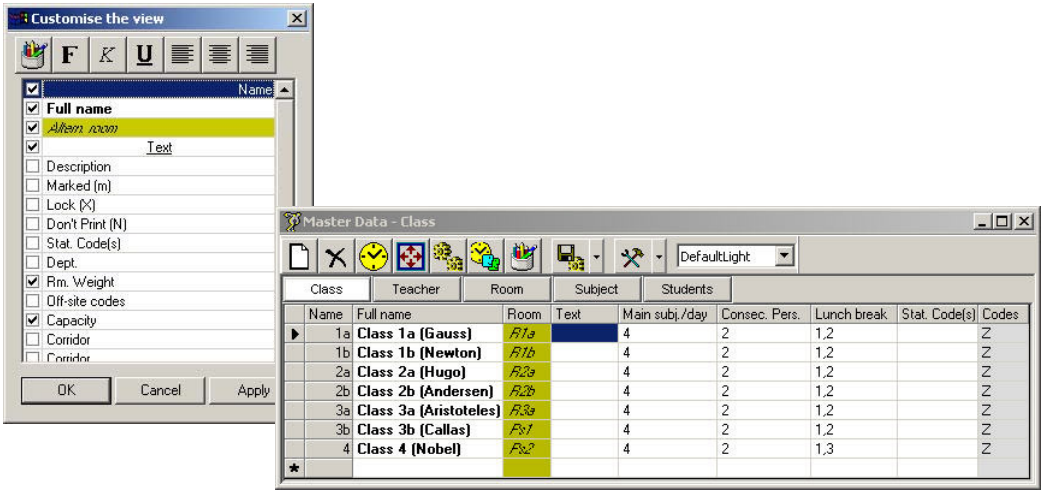

The number and type of special functions displayed on the menu list under <Customise> depend on the active type of element. Click on the <Customise> button (not on the small triangle used to open the list of special functions) to customise your settings.

The dialogue window "Customise the view" allows you to:

- Show and hide columns,
- select a font style for individual columns (bold, italic, underlined),
- select the desired alignment for individual columns (left, right or center) and
- assign a colour to individual columns.

**Note**

With the exception of colour, the chosen settings will also appear on printouts.



## Settings

**Settings**

You can save the position, arrangement and contents of windows in separate files at any stage during the timetabling work, allowing you to access desired information quickly and easily at any time.

By the same principle, the All Elements window can also be saved at different stages of the editing process. Each separate stage can then be called up with the click of a button.

### Creating a new view

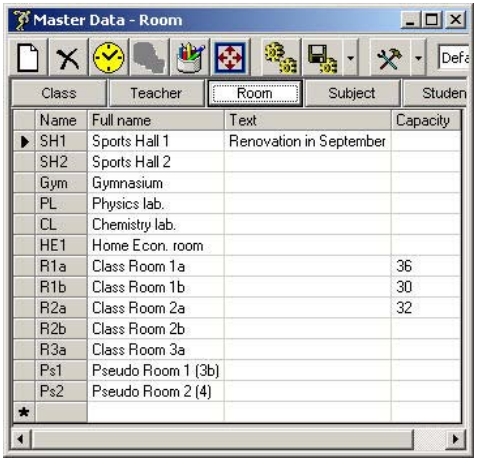
**Example**

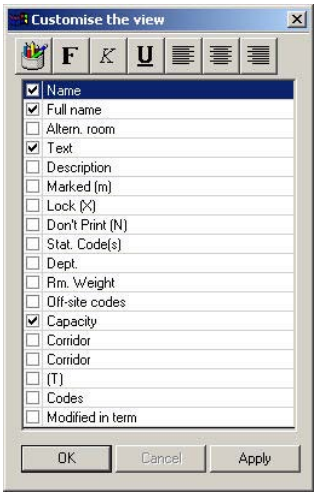
For administrative purposes, you require a printed list of all the rooms in the school including details on room capacity.

For the construction of the timetable, however, you require additional information such as the room weighting and alternative rooms - details you do not want to appear on the above list.

Solve this problem by saving two separate versions of the window, i.e. the version "Printed List" and the version "Timetable construction". You can then simply switch between the two versions by clicking on the appropriate button (see following example).

- Under <Customise>, prepare the window for printing by ticking the options you require.



**Settings**

**Save As**

- Click on <Settings>.

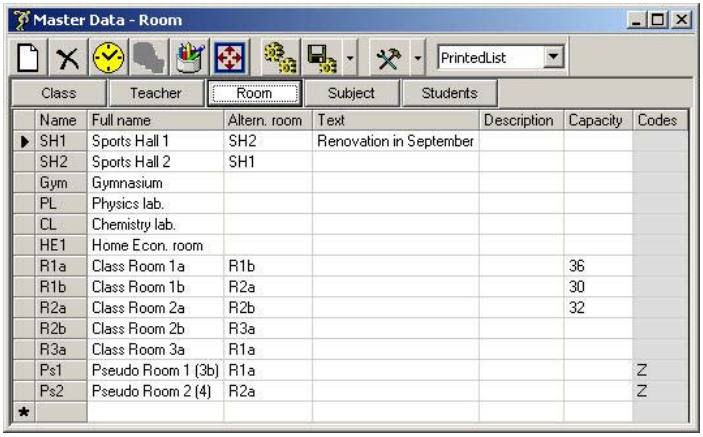



The "Settings" dialogue appears where you can save your current settings.

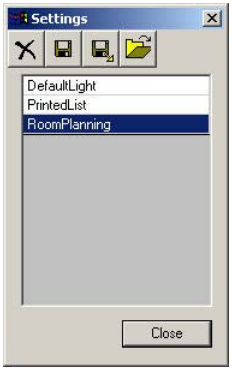
- Click on <Save As>.
- Save the settings under an appropriate name such as "Printed list".
- Close the "Settings" dialogue box by clicking on <OK>.




- Adapt the window for work on the timetable by displaying the additional columns you require (for example via the <Customise> function).



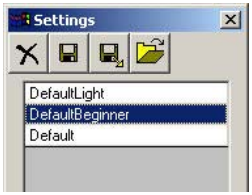

| | Name | Full name | Altern. room | Text | Description | Capacity | Codes |
|---|---|---|---|---|---|---|---|
| ▶ | SH1 | Sports Hall 1 | SH2 | Renovation in September | | | |
| | SH2 | Sports Hall 2 | SH1 | | | | |
| | Gym | Gymnasium | | | | | |
| | PL | Physics lab. | | | | | |
| | CL | Chemistry lab. | | | | | |
| | HE1 | Home Econ. room | | | | | |
| | R1a | Class Room 1a | R1b | | | 36 | |
| | R1b | Class Room 1b | R2a | | | 30 | |
| | R2a | Class Room 2a | R2b | | | 32 | |
| | R2b | Class Room 2b | R3a | | | | |
| | R3a | Class Room 3a | R1a | | | | |
| | Ps1 | Pseudo Room 1 (3b) | R1a | | | | Z |
| | Ps2 | Pseudo Room 2 (4) | R2a | | | | Z |
| * | | | | | | | |




- Click on <Settings> and save the current window appearance under a suitable title such as "Room planning".

From now on, you can activate the saved settings by double clicking on the name of the window appearance you require.

If you are unfamiliar with the gp-Untis software, we would recommend using the beginner's default settings predefined for all element types.



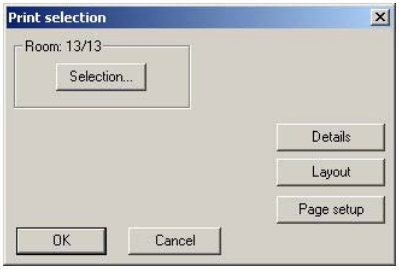

## Printing

When the All Elements window is active (after clicking on the window, i.e. when the window is at the front and the title bar is dark blue), the buttons <Print> and <Print Preview> will also be active. Clicking on either of the two buttons will bring up the "Print selection" dialogue.

 **Print**

 **Print Preview**

Select the elements you want to print by clicking on <Selection…>. As a rule, the printout shows the contents of the current data grid, i.e. all the columns active in the grid at the time of printing. The order of columns in the printed version is identical to the order displayed on the current screen.




## Entering new elements

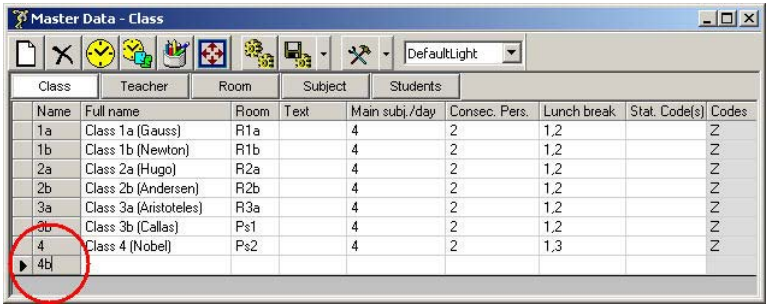
The last row in the grid is empty and can be used to enter a new element (the row is marked with an asterisk (*) in the first column).

- Open the grid for classes.
- Click on the last (empty) row in the column "Name" and enter "4b" (see the example on the following page).

Alternatively, click on <New> in the tool bar.

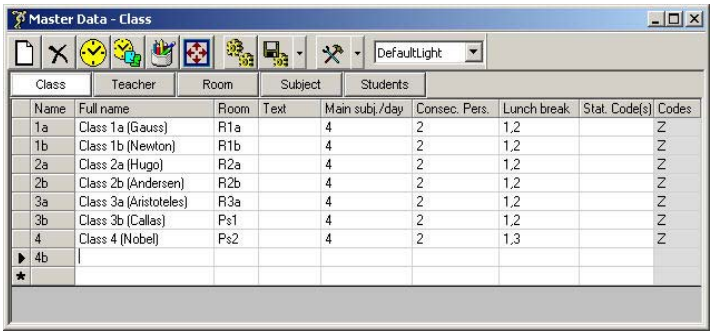
 **New**

**Entering new elements**




▶ Confirm by pressing <Tab>, <Enter> or one of the cursor keys.

You have created a new master data element.




## Deleting elements

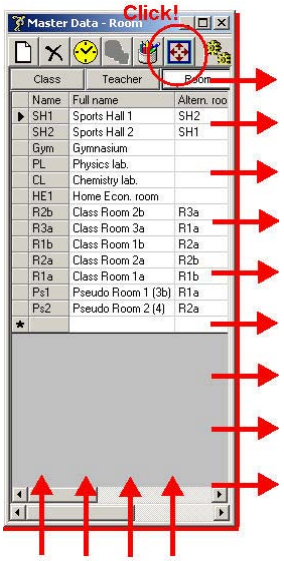
**Delete element**

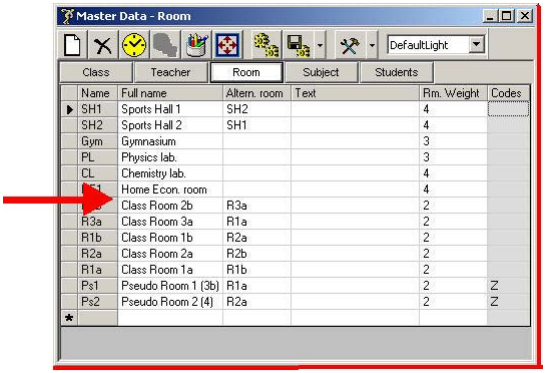
To delete an existing element, click on the corresponding row and then on <Delete>.

## Resizing the window

**Resize the window**

This function enables you to adjust the window frame to the size of the data grid (see figure on following page).




**Resize window**

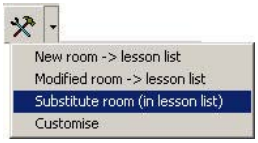
## Time requests

Open the "Time requests" window for the active element by clicking on <Time requests>. Since time requests play a central role in the gp-Untis programme, the manual devotes an entire chapter to the topic (see "User tips / Time requests", p.260).




## Special functions

In addition to the <Customise> function described above, you can call up further special functions for classes and teachers by clicking on <Special Functions> (also see the chapter "Home rooms for classes and teachers" on p.287 under "User tips").



## Data input

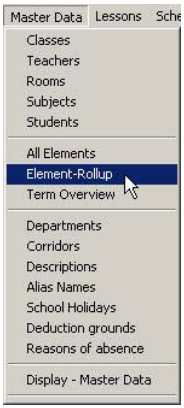
Once an element has been created, you can assign different attributes to the element by entering additional data in the grid. Some input fields allow you to activate or deactivate certain attributes by ticking the appropriate box (e.g. Lock (X)). Other fields allow you to enter (alpha) numerical data (e.g. text) while a third type of field is designed to accommodate existing element names (e.g. alternative room).

The All Elements window provides a number of input aids for use with the third type of input fields described above. Please see the examples in the following chapter. Open the demo file *demo.gpn* and open the All Elements window. Activate the element type "Class" and delete the field "Room" for all classes by pressing the <Delete> key.

### Entering data using Drag&Drop from the Element-Rollup

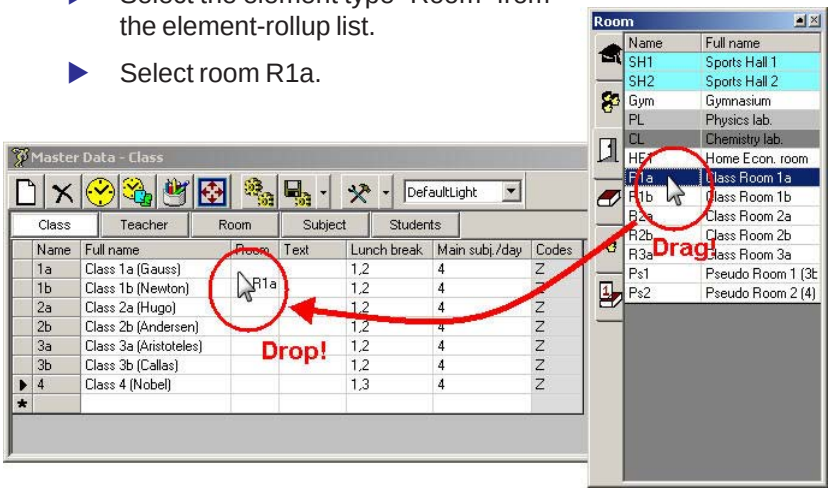
**Element-Rollup**

Open the element-rollup via the button <Element-Rollup > or via the menu "Master Data".




The sole purpose of the element-rollup is to enter master data elements via Drag&Drop.

- Select the element type "Room" from the element-rollup list.
- Select room R1a.



- Drag room R1a to the All Elements window and drop it in row 1a under "Room".

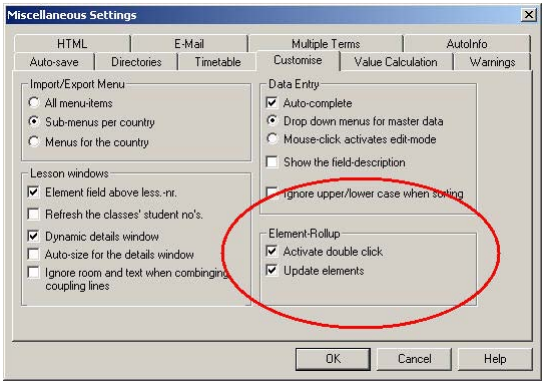
Room R1a is now the designated home room for class 1a.

The "Customise" tab under "Settings | Miscellaneous" offers two options for the management of the element roll-up:

**Note**

### Activate double click

Ticking this option allows you to enter an element from the element-rollup in the active cell of the window you are working on by double clicking on the element.




### Update elements

Ticking this option allows you to activate an element in other open windows by clicking on the name of the element in the element roll-up.

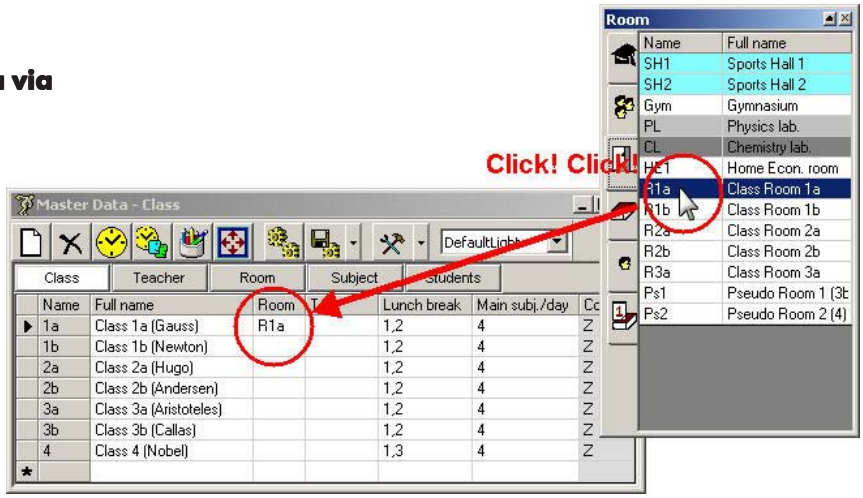
- First, delete the entry R1a under "Room" for class 1a (select the appropriate cell and press the <Delete> key).
- Ensure that the option "Activate double click" on the "Customise" tab under "Settings | Miscellaneous" is activated.

**Example**

- Double click on the element R1a in the element roll-up.

The room R1a appears in the field last activated, i.e. under "Room" of class 1a (also see the figure on the following page).

## Entering data via double click

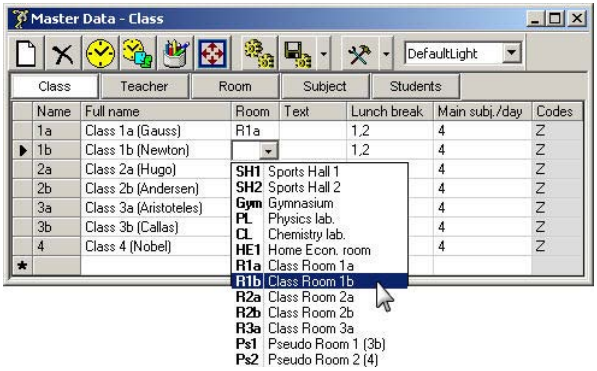



## Entering data by selecting from the element list

You can also enter data using the drop-down list.

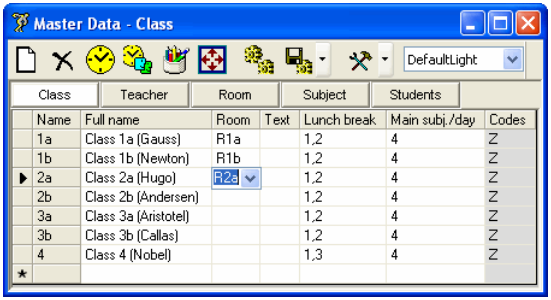
**Example**

- Click on the "Room" cell in the row for class 1a.
- Open the drop-down list and select the room R1a.



## Entering element names via the keyboard

Instead of selecting the desired element from the list as described in the previous example, you can enter the name directly in the field. The <Auto-complete> function compares your input with known element names and will attempt to auto complete the entry to save you from having to type the full name. Accept the suggestion made by the Auto-complete function by pressing the <Tab> key.




The Auto-complete function can be deactivated on the "Customise" tab under "Settings | Miscellaneous".

## Serial input - selection

A particularly useful function is the serial input option that can be used to enter data for a selection of elements.

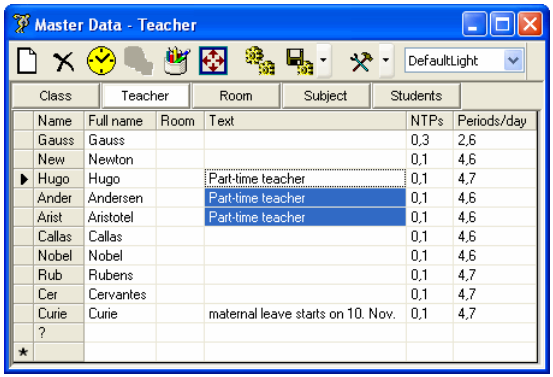
**Example**

You want to enter the text "Part-time teacher" for teachers Anderson, Hugo and Aristotle.

- In the All Elements window, activate the "Text" cells for the three teachers.
- Enter the text "Part-time teacher" and press on <Enter>.

The data appears in all the selected cells.

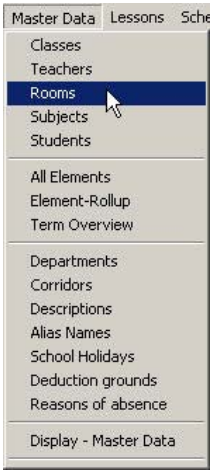
Most of the techniques described in the last section also apply to the general Master Data windows described in the following chapter.



# The master data views

In addition to the All Elements window where all the elements are represented in a single window, the software offers specialized master data views where individual types of element can be managed in separate, dedicated windows.

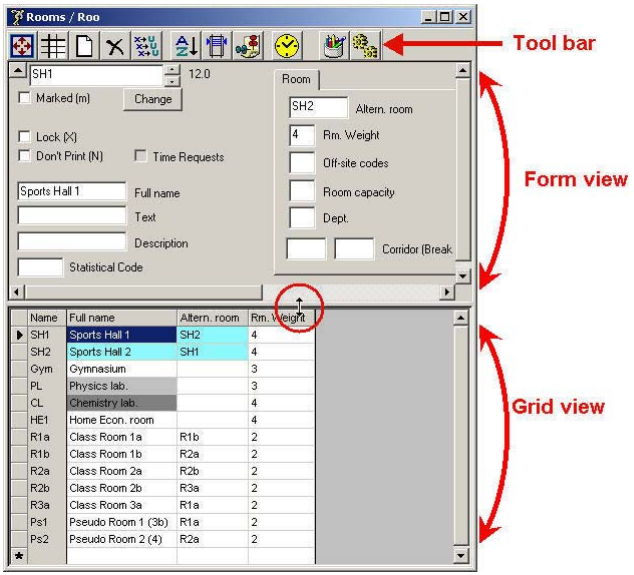
## Standard views




Standard views are views that can be selected directly from a menu. For example, clicking on the menu item "Master Data | Rooms" displays the standard view for rooms.

- Start gp-Untis and load the file *demo.gpn.*
- Open the standard master data view for rooms ("Master Data | Rooms").

The view on your screen should correspond approximately to the view in the figure below.



## Window structure

The window consists of three basic components: the tool bar, the form view and the grid view. The functions of the tool bar will be discussed in detail in a later chapter.

### Form view

**Form view**

The form view is dedicated to one element and its attributes. In the example above, the form view displays the name of the selected room, the (often more informative) full name of the room, the room capacity etc.

### Grid view

**Grid view**

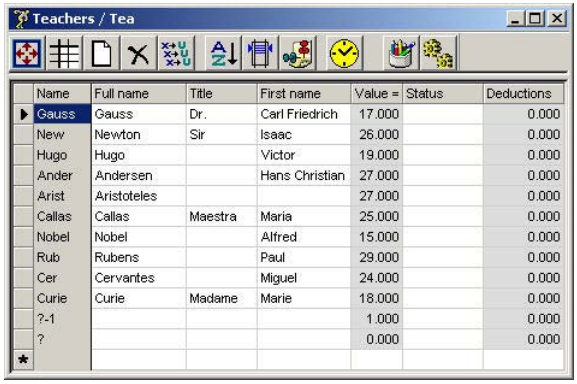
In contrast to the form view, the grid view is organized as a table with individual rows. Each row represents one element. The grid view displays all the attributes activated in the corresponding view (by the user). The activated attributes in the example above are name, full name, alternative room, text, room weighting, off-site code and capacity.

You can change the relative window proportions at any time by placing the cursor on the dividing line between two windows where the cursor symbol changes to a double arrow (see red circle on the figure above). Simply drag the line to the desired position. By shifting the dividing line, one window component can be made to hide another component completely.

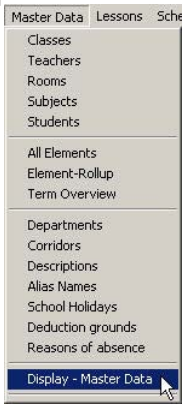


**Non-editable fields**

Non-editable fields containing data that cannot be modified are shaded grey (see example on the right).




| | Name | Full name | Title | First name | Value = | Status | Deductions |
|---|---|---|---|---|---|---|---|
| ▶ | Gauss | Gauss | Dr. | Carl Friedrich | 17.000 | | 0.000 |
| | New | Newton | Sir | Isaac | 26.000 | | 0.000 |
| | Hugo | Hugo | | Victor | 19.000 | | 0.000 |
| | Ander | Andersen | | Hans Christian | 27.000 | | 0.000 |
| | Arist | Aristoteles | | | 27.000 | | 0.000 |
| | Callas | Callas | Maestra | Maria | 25.000 | | 0.000 |
| | Nobel | Nobel | | Alfred | 15.000 | | 0.000 |
| | Rub | Rubens | | Paul | 29.000 | | 0.000 |
| | Cer | Cervantes | | Miguel | 24.000 | | 0.000 |
| | Curie | Curie | Madame | Marie | 18.000 | | 0.000 |
| | ?-1 | | | | 1.000 | | 0.000 |
| | ? | | | | 0.000 | | 0.000 |
| * | | | | | | | |




## Predefined views

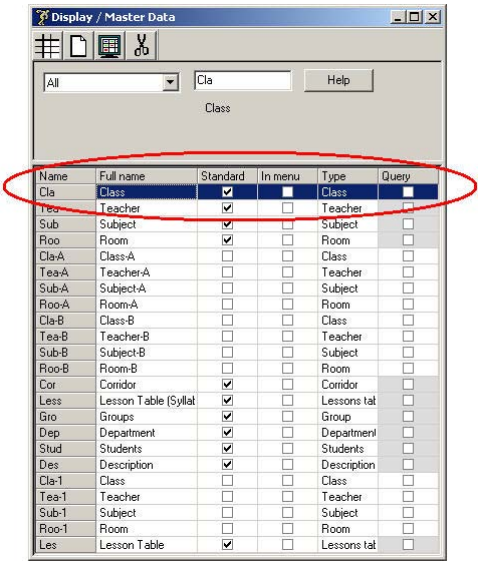
The dialogue box "Display – Master Data" can be accessed via the menu item "Master Data | Display – Master Data".

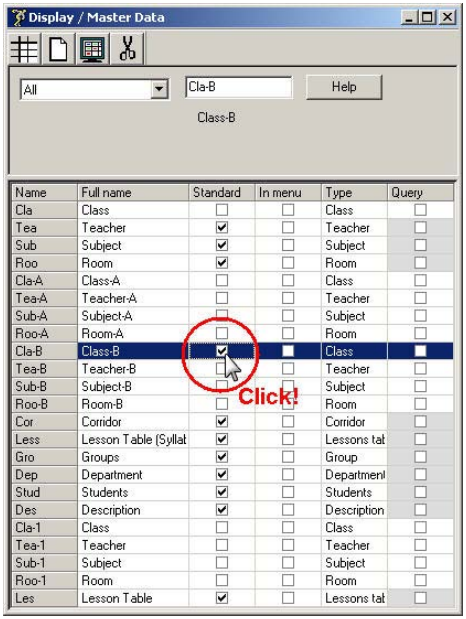
This window displays all the (predefined) views on individual rows. Each view has an abbreviated name for purposes of programme-internal identification and a "Full name" that provides a more detailed description of the view.

## Standard views

In the example below, there is a tick in the "Standard" box for the view Cla - Class. This means that the standard view will be displayed when you call up the menu item "Master Data | Classes".

Select a different standard view by ticking the "Standard" box in the row of the element type you wish to display.




**Selecting a standard view**

**Note**

Please note that each element type can only have one standard view and that standard views cannot be deleted or used for queries. The "Query" function will be described in more detail in the following chapter.

The names of the predefined standard formats consist of the first three letters of the applicable element. These standard formats are particularly useful for beginners since all the important fields where data should be entered in the grid view are already activated.

In addition to the standard formats, the software provides predefined Class, Teacher, Subject and Room formats with names ending in -A or -B (e.g. Cla-A or Tea-B). For formats -A, all the input fields are activated, for formats -B only the fields for abbreviated name and full name are activated.

**Tip**

Open a view by double clicking on any cell in the row of the desired view. The exception to this rule is the first column "Name". Double clicking on this field allows you to rename the view.

**Tip**

Similar to the All Elements window where the order of the master data can be changed by Drag&Drop, you can change the order of the views by clicking on the first grey column of a view – in this case the Name column– and drag it to the desired location.

The following functions are available via the tool bar buttons:

 Opens the Grid Adjustment dialogue of the active view

 Creates a new view

 Opens the selected view

 Deletes the selected view

### Including views in the menu

When ticking the box for a view other than the standard view, the full name of the view is displayed at the end of the master data menu, allowing you to open the view via this menu item.

## Customising existing views

**Example**

Customise existing views quickly and easily to suit your individual requirements. The following examples demonstrate how to do this.

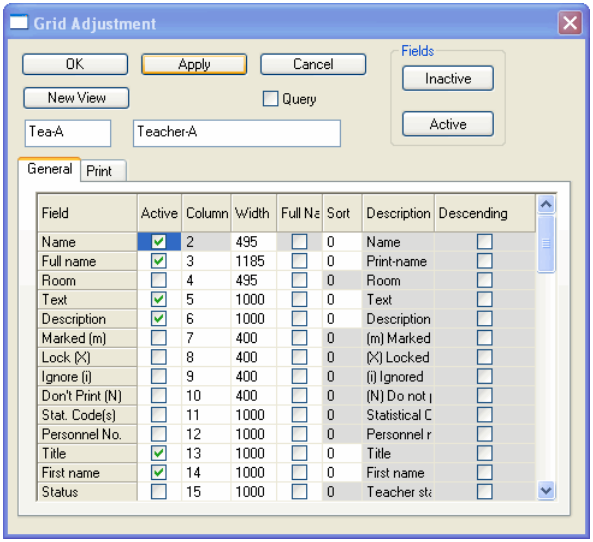
### Customising displayed data fields

You can specify which data fields should be displayed in the grid.

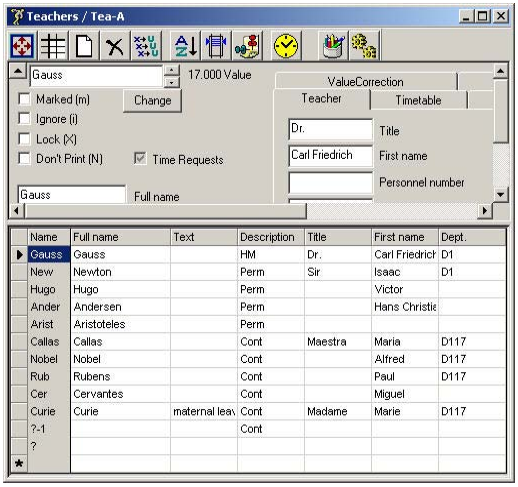
- Start gp-Untis and load the file *demo.gpn*.
- Open the view Tea-A.
- Click on <Grid Adjustment> on the tool bar of the view Tea-A.

**Grid Adjustment**

The grid adjustment dialogue appears on the screen. Initially, all the options in the column "Active" are activated. Select the options you wish to display in your view by unticking the boxes you want to deactivate or by highlighting adjacent fields and clicking on <Inactive>. Confirm your selection by clicking on <Apply> or <OK>.




The figure on the left shows a grid adjustment dialogue where the options Name, Full name, Text, Description, Title, First name and Department are active. The figure below shows the resulting view.



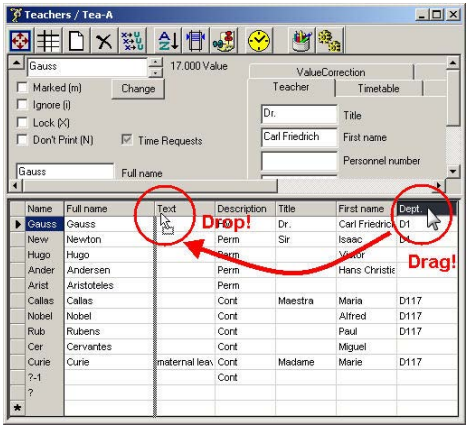

Individually designed teacher view

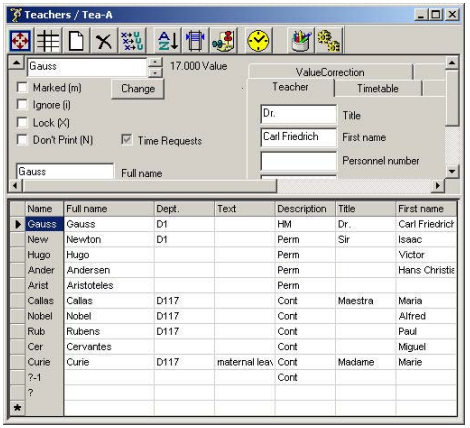
## Moving columns

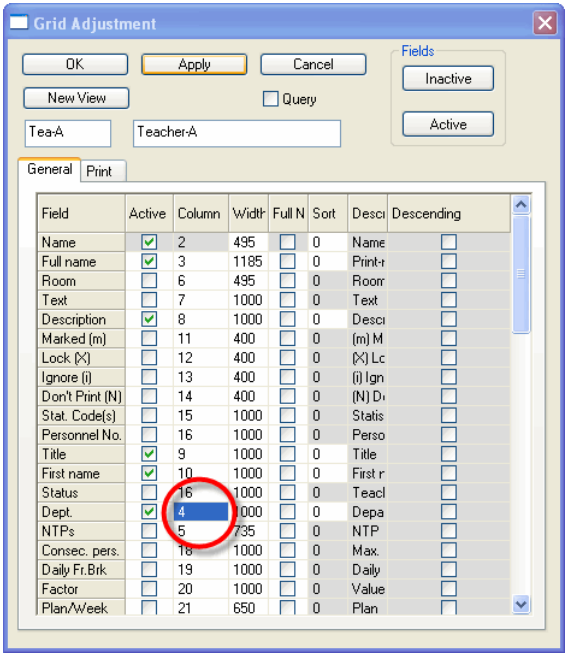
The order of the columns in the grid view can be changed in the same way as in the All Elements window, i.e. by dragging the column to the desired location.

The figure below demonstrates how to move the last column "Department" to the third position in the grid, directly following the column "Full Name". The figure on the right shows the result: The column "Dept." is now located directly beside the column "Full name".

Moving columns per Drag&Drop






The grid adjustment dialogue also reflects the new column order. Under "Column", the field "Dept." now has the value 4.

**Note:** Alternatively, change the column order by entering the desired position of a column directly under "Column" in the grid adjustment dialogue.

**Note:** The first column of the grid view is reserved for element names and cannot be changed.

## Sorting elements

The Master Data View offers three different sorting options.

1. Sorting by mouse click on the column heading. We have already described this (temporary) function in the section "The All Elements window" above. The function works in exactly the same way for master data views.
2. Sorting via the <Sort> function in the tool bar. This method is described in detail in a dedicated chapter on tool bar functions.
3. Sorting via the grid adjustment dialogue. This option is described in detail below.

**Sort**

**Example**

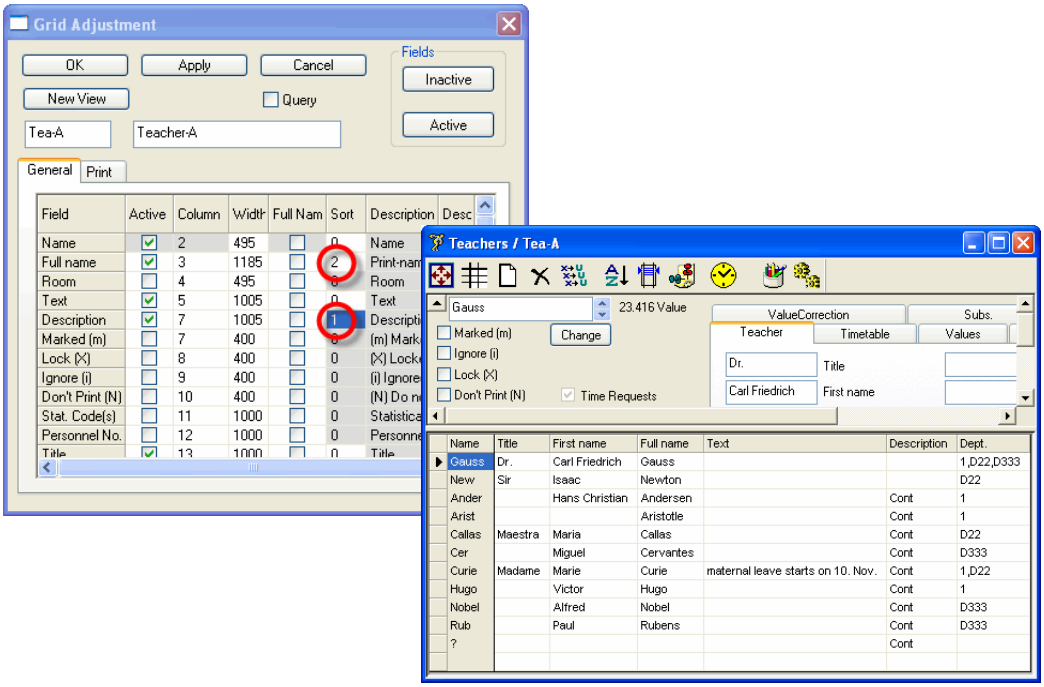
- Open the grid adjustment dialogue of the view Tea-A from the previous example.
- Enter the figure "1" in the row "Full Name" under "Sort" and click on <Apply>.

The teacher master data appear in alphabetical order sorted by full name. You can even combine a number of different sorting symbols in the grid adjustment dialogue:

- First enter the number "1" in the row "Description" under "Sort" and then the number "2" in the row "Full Name". Click on <OK>.

The data will be sorted primarily by description, and within the category "Description" by full name (see example).

Per default setting, the data is always sorted in ascending order.




**Sort in descending order**

You can change this setting by selecting "Sort in descending order" in the grid adjustment dialogue. This option is only available when a number has been entered in the corresponding row under "Sort".

**Note**

Sorting via the grid adjustment dialogue results in a permanent sorting order. This only applies to the corresponding view and has no effect on other views or the print order. Sort other views or the print order by moving the data in the data structure on which the programme is based. Detailed instructions on how to move element rows in a master data view can be found in the chapter "Moving elements" on p. 43.

**Note**

Please note that the sorting functions via the grid adjustment dialogue and via the <Sort> button employ different methods for managing lower / upper case characters and special characters.

## Creating a new view for teachers

You can create customized views at any time.

- Open the master data view from the previous example by clicking on "Master Data | Display – Master Data".

**New**

- Place the cursor in the row "Tea-B | Teacher-B" and click on <New>.




The screen displays a dialogue window where you can rename the view, e.g. "TeDpt, Teachers: department-wise".

Of course, you can also adopt the suggested name "Tea-31 | Teacher-31" and rename the view later.

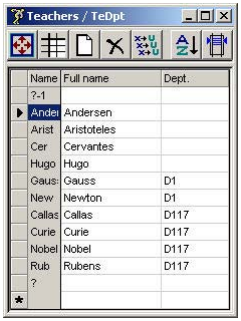
After clicking <OK>, the new view appears in the option list.

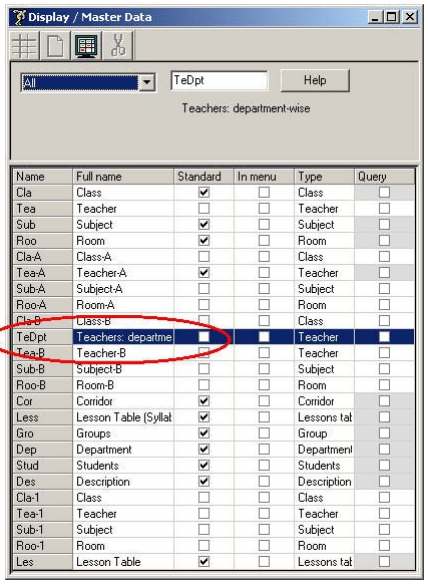
**Grid Adjustment**

- Activate the new view (by clicking on it) and click on <Grid Adjustment>
- Deactivate all the fields with the exception of Name, Full Name and Department.

- Sort primarily by department (Sort = 1), and then by full name (Sort = 2) and click on <OK>.
- Open the new view by clicking on <Show View> or by double clicking on the full name.

Now you have access to a list of teachers sorted by departments.

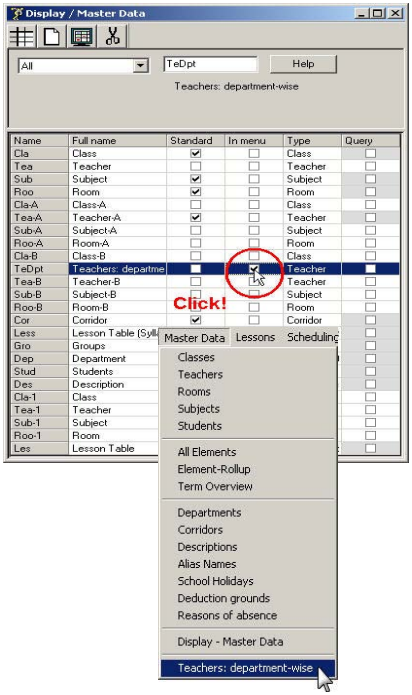



## Including new views in the menu

You can include the new view directly in the menu "Master Data". This has the advantage that you can access the window directly via this menu and can bypass the longer route via the "Display – Master Data" list.

- Open the "Display – Master Data" window via menu item "Master Data | Display - Master Data".
- Tick the box "In menu" in the corresponding column for TeDpt.
- You can now access the view directly from the Master Data menu.



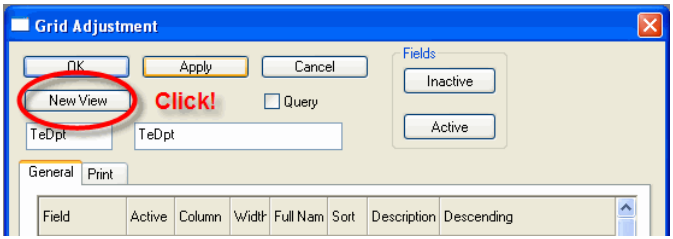
## The queries function

The "Query" function allows you to filter the list of displayed elements in the grid view.

### Using the query function

The following example demonstrates how to create a new view and how to use the query function to display teachers of a selected department..

- Open the grid adjustment dialogue of the "TeDpt" view from the previous example.
- Click on <New View> in the grid adjustment dialogue.




This will create a new view based on the view from which you accessed the grid adjustment dialogue. This procedure is an alternative method for creating views (compare the chapter "Creating a new view" above).

- Enter the name "TeDptSel" and the full name "Teacher: Department D117" for the new view in the window.

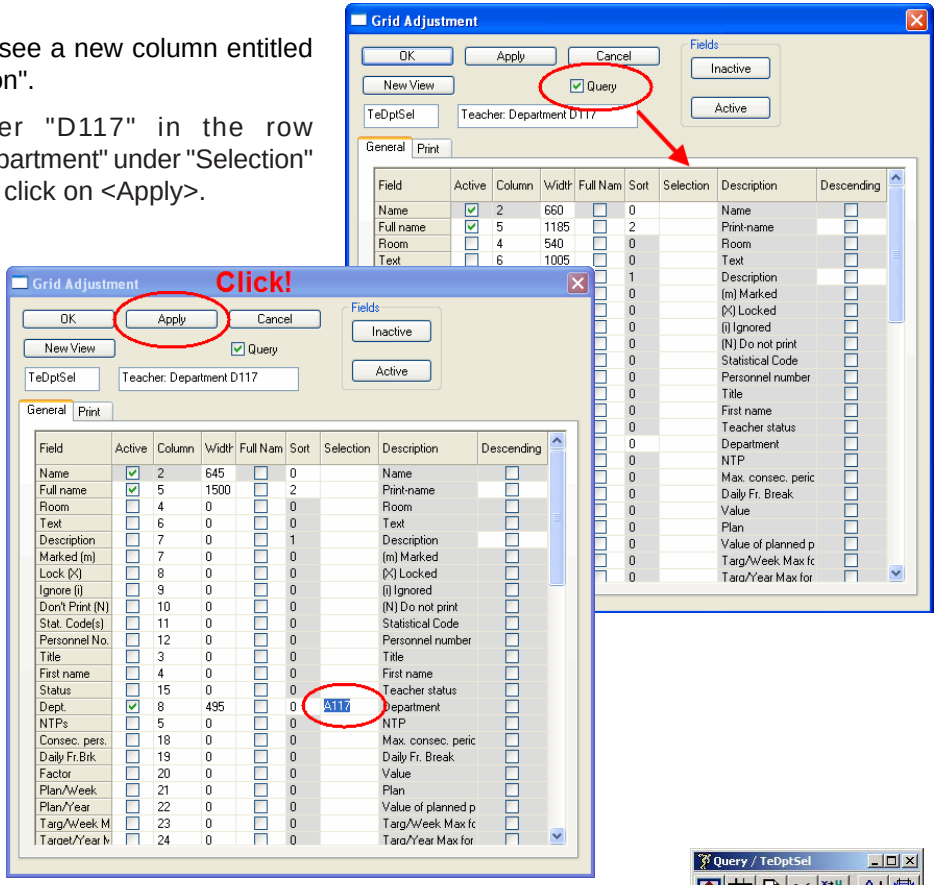



A new view entitled "TeDptSel" appears.

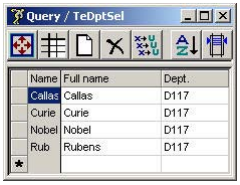
- Open the grid adjustment dialogue of the view "TeDptSel".
- Tick the box "Query" in the grid adjustment dialogue.

You will see a new column entitled "Selection".

- Enter "D117" in the row "Department" under "Selection" and click on <Apply>.



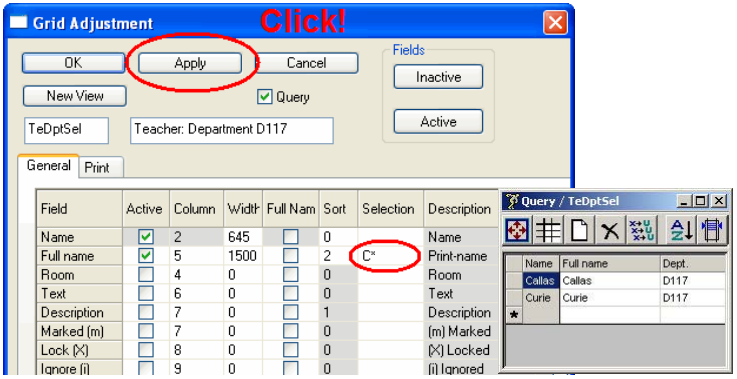

The word "Query" appears in the title row of the view and the grid displays only the teachers assigned to department D117.




You can even combine selection criteria by entering the place holders (*) (for any arbitrary string) and "?" (for a single character) in the entry field.

- Enter C* in the row "Full Name" under "Selection" and click on <Apply>.

The query function displays only the teachers assigned to department D117 and whose full name starts with "C".



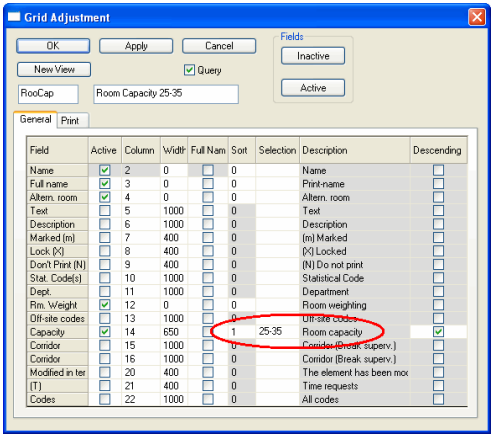

## Combining selection criteria

The following facts are useful for working with the query function:

- The place holder (*) supplies all the elements where the corresponding input field contains data.
- Select empty fields by entering two "" (two sets of inverted commas).

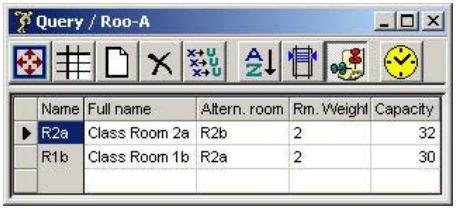
## Logic operators

- Permitted logic links are "!" (NOT, e.g. "! 1a"), ">" (LARGER THAN, e.g. "> 10"), ">=" (LARGER THAN OR EQUAL TO, e.g. ">= 11)", "<" (SMALLER THAN, e.g. "< 20") and "<=" (SMALLER THAN OR EQUAL TO, e.g. "<= 19").




- Numerical fields allow the input of number ranges (see following example).

You want to select every room with a capacity of 25 to 35 seats. The result is displayed in



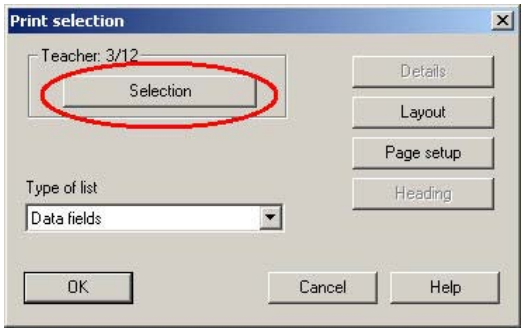
descending order.
It is not possible to combine several conditions in one query field.

**Print**

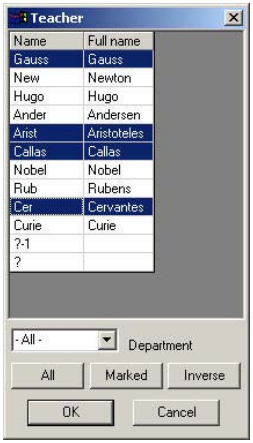
**Print Preview**

## Printing

When a view (or the query function) is active, i.e. when you have clicked on the view and the title bar is blue, the functions <Print> and <Print Preview> will also be active. Click on one of these buttons to open the Print Selection dialogue.




Select the elements you want to print by clicking on <Selection>.




Select any teachers using the normal MS Windows selection mechanisms.

As a rule, the fields activated in the grid view are printed in the order in which they appear in the grid.

**Print Preview**

- Load the file *demo.gpn*.
- Open the standard master data view for classes ("Master Data | Classes").
- Activate the fields for number of male and female students ("Female" and "Male") via the grid adjustment dialogue.
- Click on <Print Preview> and confirm the selection by clicking on <OK>.

## Printing Master Data

The Print Preview on your screen should correspond approximately to the figure below.

gp-Untis 2007 Timetable 2007/2008 Test school DEMO 05.03.07 22:11
12 Valid from: 10 October For demo and test only Class

| Name | Full name | Room | Main subj./day | Consec. Pers. | Female | Male |
|---|---|---|---|---|---|---|
| 1a | Class 1a (Gauss) | R1a | 4 | 2 | 12 | 16 |
| 1b | Class 1b (Newton) | R1b | 4 | 2 | 7 | 22 |
| 2a | Class 2a (Hugo) | R2a | 4 | 2 | 12 | 14 |
| 2b | Class 2b (Andersen) | R2b | 4 | 2 | 18 | 13 |
| 3a | Class 3a (Aristoteles) | R3a | 4 | 2 | 11 | 17 |
| 3b | Class 3b (Callas) | Ps1 | 4 | 2 | 14 | 8 |
| 4 | Class 4 (Nobel) | Ps2 | 4 | 2 | 12 | 11 |

Gruber & Petters Software

### Customising column headings

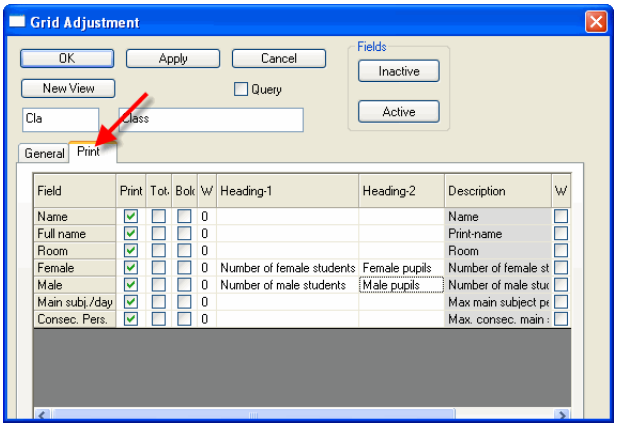
You can customise column headings to suit your individual print requirements.

**Example**

The following example demonstrates how to change the standard headings in columns containing student data.

- Open the grid adjustment dialogue of the standard master data view "Classes" from the previous example.
- Select the "Print" tab.

You can enter up to two separate lines in each field containing a heading.




- Enter *Female students/* in the row "Female" ("Number of female students") under "Heading-1" and *Female pupils* under "Heading-2".
- For male students, enter *Male students/* under "Heading-1" and *Male pupils* under "Heading-2".

- Click on <OK> and then on <Print Preview>.

The last two columns now contain the modified print headings.

gp-Untis 2007 Timetable 2007/2008 Test school DEMO 05.03.07 22:22
12 Valid from: 10 October For demo and test only Class

| Name | Full name | Room | Main subj./day | Consec. Pers. | Female students/ Female pupils | Male students/ Male pupils |
|---|---|---|---|---|---|---|
| 1a | Class 1a (Gauss) | R1a | 4 | 2 | 12 | 16 |
| 1b | Class 1b (Newton) | R1b | 4 | 2 | 7 | 22 |
| 2a | Class 2a (Hugo) | R2a | 4 | 2 | 12 | 14 |
| 2b | Class 2b (Andersen) | R2b | 4 | 2 | 18 | 13 |
| 3a | Class 3a (Aristoteles) | R3a | 4 | 2 | 11 | 17 |
| 3b | Class 3b (Callas) | Ps1 | 4 | 2 | 14 | 8 |
| 4 | Class 4 (Nobel) | Ps2 | 4 | 2 | 12 | 11 |

Gruber & Petters Software

Print with modified column headings

**Other special properties of the Master Data print function**

Some attributes of master data elements are elements in their own rights, such as "Room" in the master data view of classes where you can enter the home room of a class.

Per default, the software displays the (abbreviated) names of these attributes. Modify these settings by placing a tick in the column "Full name" on the "General" tab of the grid adjustment dialogue. This will cause the full name of the view to be displayed and printed (see the column "Room" in the following example).

gp-Untis 2007 Timetable 2007/2008 Test school DEMO 05.03.07 22:29
12 Valid from: 10 October For demo and test only Class

| Name | Full name | Room | Main subj./day | Consec. Pers. | Female students/ Female pupils | Male students/ Male pupils |
|---|---|---|---|---|---|---|
| 1a | Class 1a (Gauss) | Class Room 1a | 4 | 2 | **12** | **16** |
| 1b | Class 1b (Newton) | Class Room 1b | 4 | 2 | **7** | **22** |
| 2a | Class 2a (Hugo) | Class Room 2a | 4 | 2 | **12** | **14** |
| 2b | Class 2b (Andersen) | Class Room 2b | 4 | 2 | **18** | **13** |
| 3a | Class 3a (Aristoteles) | Class Room 3a | 4 | 2 | **11** | **17** |
| 3b | Class 3b (Callas) | Pseudo Room 1 (3b) | 4 | 2 | **14** | **8** |
| 4 | Class 4 (Nobel) | Pseudo Room 2 (4) | 4 | 2 | **12** | **11** |
| | | | | | **86** | **101** |

Gruber & Petters Software

Bold print

The above figure displays the columns for student numbers (male and female) in bold as well as an additional row displaying the total number of students. The settings for these functions can be modified via the "Print" tab of the grid adjustment dialogue.

Depending on the type of view, further print functions may be available (via the drop down list).

A detailed description of these print functions can be found in the relevant chapters below.

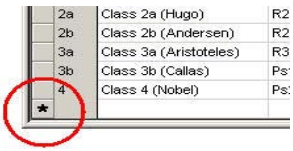



## Entering new elements

The following example demonstrates how to enter new elements in the master data views.

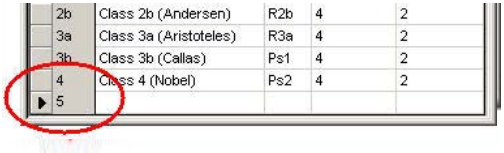
**Example**

- Start gp-Untis, load the file *demo.gpn* and close all other windows (Ctrl - K).
- Open the standard master data view "Classes" ("Master Data | Classes").

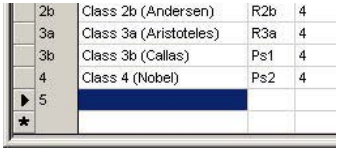



The asterisk (*) in the first column of the last (empty) row in the grid view marks the row where a new element can be entered.

- Place the cursor in the column "Name" of the last free row in the grid view, enter the number 5 and confirm by pressing <Tab> or <Enter>.



| | | | | |
|---|---|---|---|---|
| 2b | Class 2b (Andersen) | R2b | 4 | 2 |
| 3a | Class 3a (Aristoteles) | R3a | 4 | 2 |
| 3b | Class 3b (Callas) | Ps1 | 4 | 2 |
| 4 | Class 4 (Nobel) | Ps2 | 4 | 2 |
| 5 | | | | |



| | | | |
|---|---|---|---|
| 2b | Class 2b (Andersen) | R2b | 4 |
| 3a | Class 3a (Aristoteles) | R3a | 4 |
| 3b | Class 3b (Callas) | Ps1 | 4 |
| 4 | Class 4 (Nobel) | Ps2 | 4 |
| 5 | | | |

You have created a new class 5. Now enter the remaining attributes such as Full Name and Room.

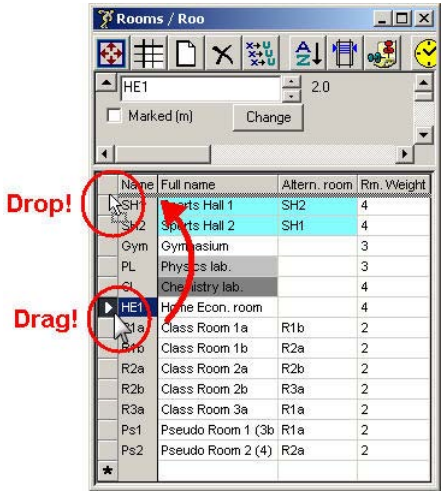
Alternatively, you can click on <New> in the tool bar of the window. The cursor automatically moves to the last (empty) row of the grid view. Again, you need to confirm the input by pressing <Tab> or <Enter>.




## Moving elements

You can modify the order in which the individual elements appear in the grid view or the form view by using Drag&Drop.

You want to move the element HE1 in the demo file to a new position above SH1. **Example**




- Start gp-Untis and load the file *demo.gpn*.
- Open the master data view for rooms.
- Click on the row of element HE1 in the grid view.
- Click on the row marker in the first column of the row, drag the row to the desired position and release it.

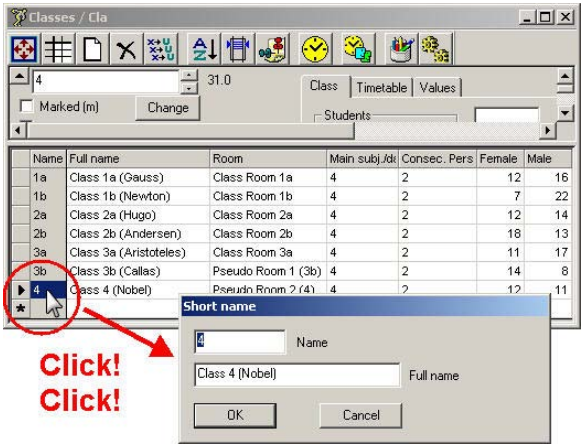
## Deleting elements



**Delete**

Delete master data elements by clicking on <Delete> in the tool bar of the view.

Alternatively, you can click on the element you want to delete in the grid view and press Ctrl-X.




## Changing element names

Change the name of an element by double clicking on the name in the grid view. A dialogue window appears where you can rename the element.

Alternatively, click on <Change> in the form view of the element you want to modify.




**Spin-Controls**

### Scrolling in the form view

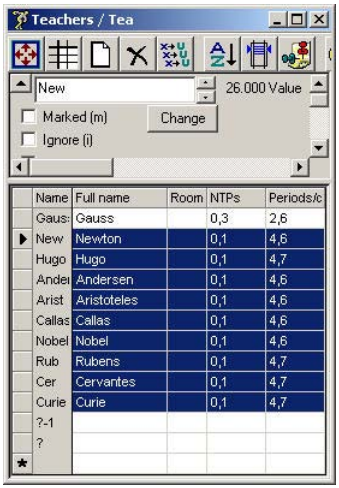
There are several methods for switching between elements in the form view. Either click on the spin controls located beside the Name field or place the cursor directly on the Name field and use the <Page Up> and <Page Down> keys or the cursor keys to scroll up or down.

Another method for displaying a specific element is to enter the name of the element in the (white) input field.

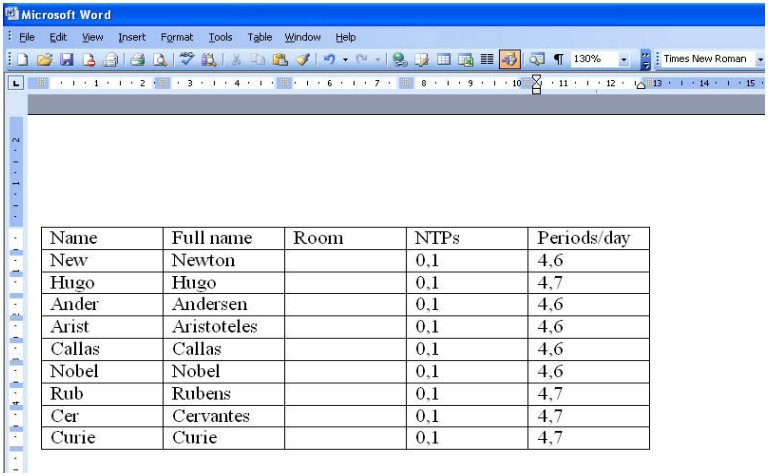
## Data exchange via the clipboard

Use the clipboard to export master data to external programmes such as spread sheet or word processing programmes.

- Start gp-Untis and load the file *demo.gpn*.
- Open the standard master data view for teachers ("Master Data | Teachers").
- Select teachers Newton to Curie by highlighting the names.
- Copy the teacher master data to the clipboard (e.g. by pressing Ctrl - C).
- Open your word processing programme and use the <Paste> function (or Ctrl - V) to insert the data.




You should now have copied the selected teacher master data to your word processing programme.




| Name | Full name | Room | NTPs | Periods/day |
|---|---|---|---|---|
| New | Newton | | 0,1 | 4,6 |
| Hugo | Hugo | | 0,1 | 4,7 |
| Ander | Andersen | | 0,1 | 4,6 |
| Arist | Aristoteles | | 0,1 | 4,6 |
| Callas | Callas | | 0,1 | 4,6 |
| Nobel | Nobel | | 0,1 | 4,6 |
| Rub | Rubens | | 0,1 | 4,7 |
| Cer | Cervantes | | 0,1 | 4,7 |
| Curie | Curie | | 0,1 | 4,7 |

You should have copied the following:

- The selected elements and
- the fields shown in the view (in the order in which they appear) and the column headings.

The individual fields are copied to the clipboard separated by tab symbols.

## The tool bar functions



The tool bar of each master data window is located at the top of the window. This tool bar is a so-called floating tool bar, which means that you can move the bar to another window edge or drag it to a completely different location on your screen in a separate window. The following section describes the different tool bar functions of the master data window.

### Resizing the window



**Resize Window**

This function allows the user to adjust the size of the window frame.

With the first click on the button <Resize window>, the outer frame resizes to fit the grid view. The second click adjusts the frame to the size of the form view, and the third click returns the window to its original size.

The individual functions can also be called up directly by using the following shortcuts:

| | |
|---|---|
| Alt - click | Fit grid view |
| Ctrl - click | Fit form view |
| Esc - click | Return to original size |

See the example in the chapter "The All Elements window" on p.21.

## Grid Adjustment Dialogue

A detailed description of the grid adjustment dialogue functions can be found in the chapter "The master data views" above.


**Grid Adjustment**

## New

Use this button to enter a new element in the view. Please see details in the chapter "Entering new elements" under "The master data views".


**New**

## Deleting elements

Use this function to delete the active element. Delete a selection of elements by using the shortcut keys Ctrl - X.


**Delete**

## Serial Change

This function allows you to replace the contents of a field in all the rows of the grid view with a single mouse click.


**Serial Change**

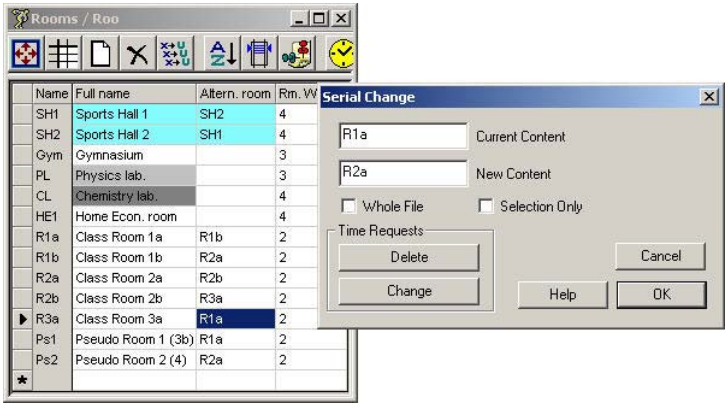
Enter the old value you wish to change in the field "Current Content" in the Serial change dialogue and the new value in the field "New Content". When you click on <OK>, the changes are applied to the selected range. The selected range usually contains all the elements of the view. Tick the control field "Whole File" to extend the selection range to all the elements of the school. By contrast, tick the box "Selection Only" if you only want to replace the elements previously selected with the mouse.

**Example**

- Start gp-Untis and load the file *demo.gpn*.
- Open the view "Master Data | Rooms" and place the cursor in the row of room R3a under Alternative Room.
- Click on <Serial change>.

This will open the Serial change dialogue. The input field "Current Content" already contains the suggested item R1a.

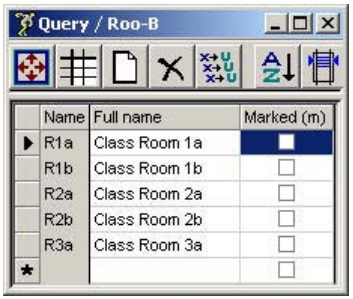
- Enter "R2a" in the field "New Content" and click on <OK>.




The alternative room for rooms R3a and Ps1 will be changed from R1a to R2a.

The <Serial change> function can also be used to place flags (binary input fields):

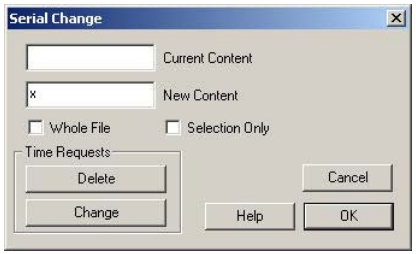
- Open the view "Room-B" from the previous example by accessing "Master Data | Display – Master Data ".
- Open the grid adjustment dialogue.
- Activate the field "Marked (m)" and tick the box "Query".
- Enter the value "Cl*" in the row "Full Name" under "Selection" and click on <Apply>.




The new view shows only the rooms beginning with "Cl". In the demo file, these are the classrooms of the school (see figure on the left).

Please note that the Query function is case sensitive.

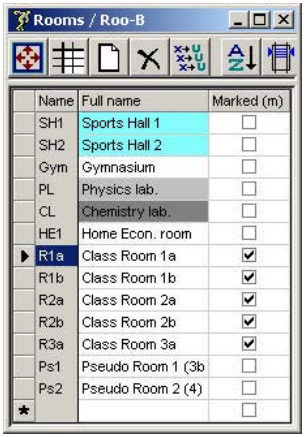
- Place the cursor in the grid view under "Marked" and click on <Serial change>. Leave the field "Current Content" empty and enter "x" in the field "New Content".
- Click on <OK>.




All the classrooms are now marked "Marked (m)".

- Remove the tick in the "Query" box in the grid adjustment dialogue and click on <OK>.

The screen now displays all the rooms in your school again (see figure on the right).



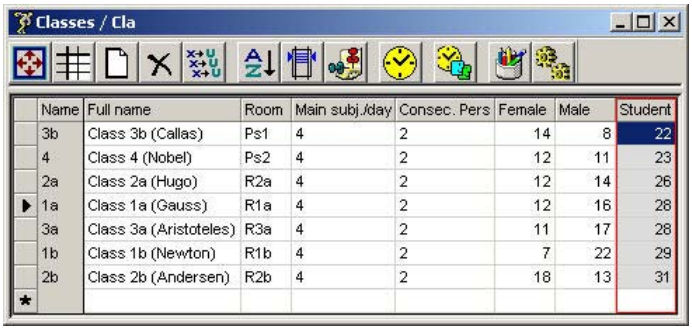

| | Name | Full name | Marked (m) |
|---|---|---|---|
| | SH1 | Sports Hall 1 | ☐ |
| | SH2 | Sports Hall 2 | ☐ |
| | Gym | Gymnasium | ☐ |
| | PL | Physics lab. | ☐ |
| | CL | Chemistry lab. | ☐ |
| | HE1 | Home Econ. room | ☐ |
| ▶ | R1a | Class Room 1a | ☑ |
| | R1b | Class Room 1b | ☑ |
| | R2a | Class Room 2a | ☑ |
| | R2b | Class Room 2b | ☑ |
| | R3a | Class Room 3a | ☑ |
| | Ps1 | Pseudo Room 1 (3b | ☐ |
| | Ps2 | Pseudo Room 2 (4) | ☐ |
| * | | | ☐ |

## Sorting

The Sort function sorts the elements of the view by active field content. While the function is active, the sorted column is highlighted with a red frame. Activate the Sort function a second time to restore the original order.




If you click on a different master data or lesson window while the Sort function is active, you will be asked if you want to retain the new order. Click on "Yes" if you want the programme to move the data internally and apply the new sorting order to other windows and functions.




| | Name | Full name | Room | Main subj./day | Consec. Pers | Female | Male | Student |
|---|---|---|---|---|---|---|---|---|
| | 3b | Class 3b (Callas) | Ps1 | 4 | 2 | 14 | 8 | 22 |
| | 4 | Class 4 (Nobel) | Ps2 | 4 | 2 | 12 | 11 | 23 |
| | 2a | Class 2a (Hugo) | R2a | 4 | 2 | 12 | 14 | 26 |
| ▶ | 1a | Class 1a (Gauss) | R1a | 4 | 2 | 12 | 16 | 28 |
| | 3a | Class 3a (Aristoteles) | R3a | 4 | 2 | 11 | 17 | 28 |
| | 1b | Class 1b (Newton) | R1b | 4 | 2 | 7 | 22 | 29 |
| | 2b | Class 2b (Andersen) | R2b | 4 | 2 | 18 | 13 | 31 |
| * | | | | | | | | |

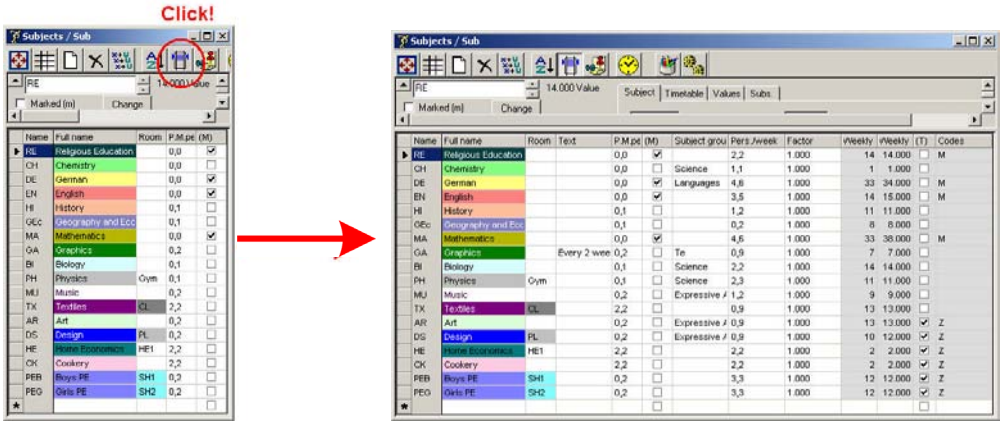
**Note**

The different sorting options available in gp-Untis are described in detail in the chapter "Sorting elements" under "Master data views" above.

## Show all fields with content

**Show fields with content**

This very useful function is designed to temporarily activate all the fields in the grid view for which data has been entered. A further mouse click on this button restores the original window display.




**Lock view**

## Lock (form) view

When this function is activated (i.e. when the button is clicked in), the relevant (form) view will remain unaffected by the processes in other windows.

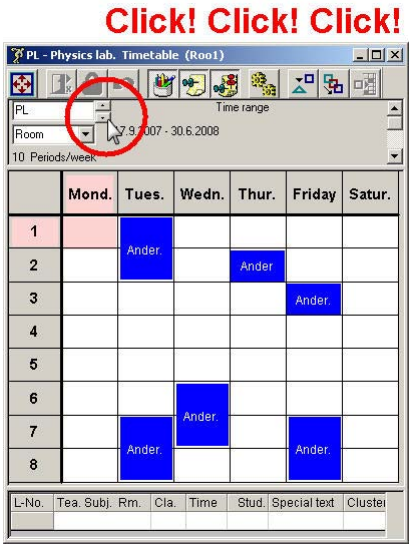
**Example**

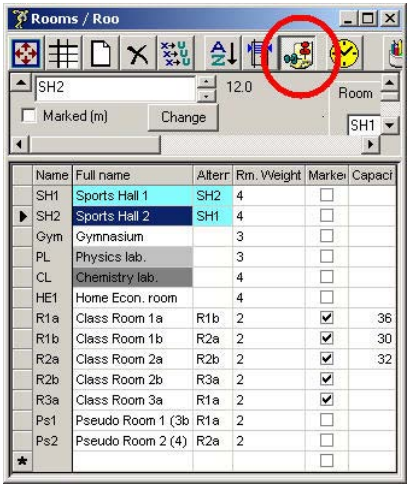
- Start gp-Untis and load the file *demo.gpn*.
- Open the master data view for rooms ("Master Data | Rooms") and a room timetable ("Timetable | Rooms").
- Scroll through the timetable from one element to the next (SH1 → SH2 → Gym …)

The element that is active on the timetable (SH1 → SH2 → Gym …) will also be displayed in the form view of the room master data.

- Select the room SH2 in the room master data view and click on <Lock this display>.
- Scroll through the timetable from one element to the next (SH2 → Gym → PL ...)

As you can see, the room master data view is no longer affected by element changes on the timetable.




## Time Requests




This function allows the user to enter time requests. Time requests for elements are graded from "-3" (completely blocked) to "+3" (period should definitely be scheduled). Since time requests are of major importance for all elements and lessons, an entire chapter is devoted to this subject in the section "User tips" below.

## Colour

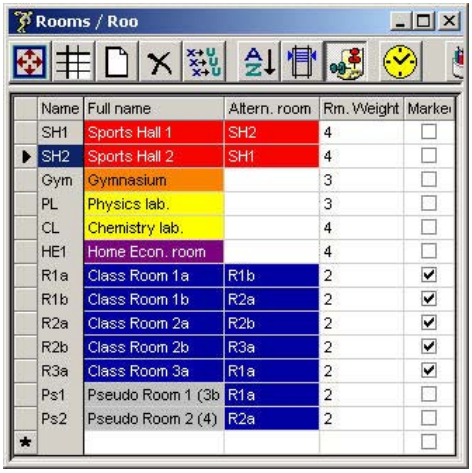
**Colour**

This button can be used to assign different foreground and background colours to individual elements. The selected colours are displayed in the master data grids on the screen (but not on printouts!), on the standard printouts of timetables, and in the planning tool displays (scheduling dialogue, planning timetable). Other gp-Untis modules such as the *Cover Planning* module also allow the colour coding of elements.

**Tip**

You can assign the same colour to several elements simultaneously by highlighting the desired elements prior to clicking on <Colour coding>.

If you want to display timetable colours on the screen, but not on printouts, select the setting "Black and white print" for the desired timetable format (via <Settings> in the respective timetable window).




| | Name | Full name | Altern. room | Rm. Weight | Marker |
|---|---|---|---|---|---|
| | SH1 | Sports Hall 1 | SH2 | 4 | ☐ |
| ▶ | SH2 | Sports Hall 2 | SH1 | 4 | ☐ |
| | Gym | Gymnasium | | 3 | ☐ |
| | PL | Physics lab. | | 3 | ☐ |
| | CL | Chemistry lab. | | 4 | ☐ |
| | HE1 | Home Econ. room | | 4 | ☐ |
| | R1a | Class Room 1a | R1b | 2 | ☑ |
| | R1b | Class Room 1b | R2a | 2 | ☑ |
| | R2a | Class Room 2a | R2b | 2 | ☑ |
| | R2b | Class Room 2b | R3a | 2 | ☑ |
| | R3a | Class Room 3a | R1a | 2 | ☑ |
| | Ps1 | Pseudo Room 1 (3b | R1a | 2 | ☐ |
| | Ps2 | Pseudo Room 2 (4) | R2a | 2 | ☐ |
| * | | | | | ☐ |

Free colour choice with master data

## Settings

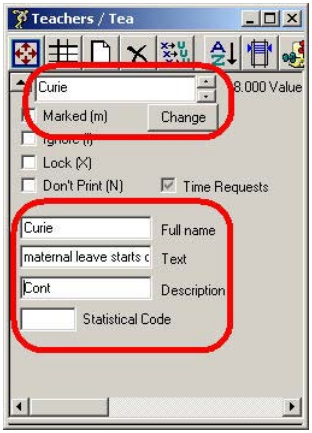
**Settings**

Use the button <Settings> to change font, font size and similar formatting.

# Master data properties

In principle, all you need to do to construct a timetable automatically is to enter a name in the Name field. As a general rule, it is always preferable to leave a field empty if the meaning is at all unclear rather than to restrict the optimisation algorithm by entering a large number of unnecessary data.

If you are unfamiliar with this programme, we would therefore recommend that you only enter master data in the small number of fields displayed in the standard grid view. All other input options should only be used at a later date when you have familiarized yourself with the software and have gained some experience with working with the optimisation tool.




## Element/independent input fields

The following section describes the input fields relevant for all elements:

### Editable fields

#### Name

This is a specific (abbreviated) name used to identify the corresponding element in the programme. You must enter a name for each element.

**Note**

In principle, nothing prevents you from assigning an identical name to two different types of element, e.g. 1a for class 1a and also for the classroom of class 1a, but we would **strongly advise against this practice**.

**Note**

Names are case sensitive, i.e. the software distinguishes between upper and lower case characters. It would therefore be possible to assign the name 1a to one class and 1A to another. However, we would **strongly advise against this practice**.

### Full name (surname)

Enter a longer, more descriptive name here. This name will appear on printouts. This field is optional, but recommended.

### Text

You can enter an explanatory text for each element.

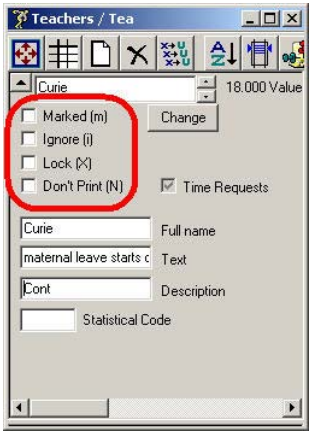
### Description

Descriptions are master data in their own right and also have their own abbreviated and full names. Descriptions are useful when the same designation applies to several elements. You can specify if you want the abbreviated name, full name and/or the description to appear on printouts and element views.

### Statistical code

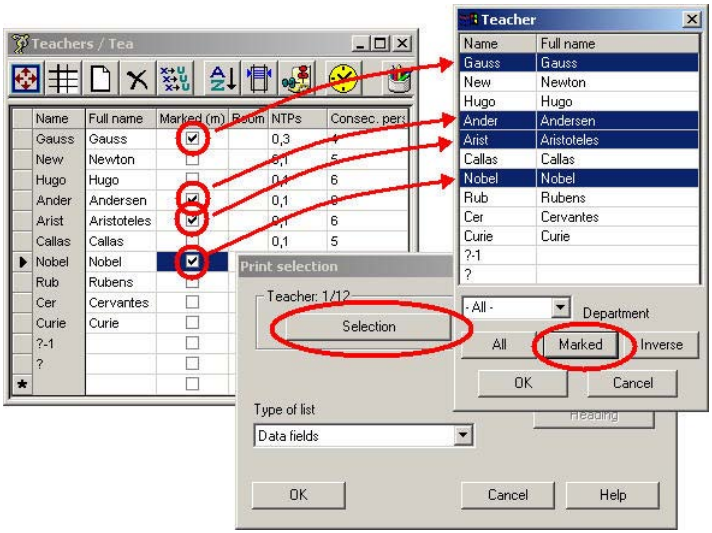
You can enter any number of statistical codes (separated by a comma) per element. Among others, these marks allow you to create well-defined subcategories for your elements. Please see the chapter "The Queries function" on p.36 for further details.

## Check boxes




### Marked (m)

The box "Marked (m)" can be ticked for any element. Use this code for certain functions such as for printing timetables or master data or for the Serial change function when you want to identify selected elements for processing (see figure on the following page).




### Ignore (i)

Lessons containing an element marked "Ignore" will be ignored on the timetable, i.e. they will not be scheduled or displayed on the timetable. The (hourly) value of such lessons, however, will be included in the calculation of the total value for teachers and classes.

**Important!**

Certain import/export interfaces may refuse to export elements marked "Ignore".

### Lock (X)

Lessons containing a locked element will be frozen on the timetable, i.e. the lessons will not be moved during subsequent optimisation runs.

### Don´t Print (N)

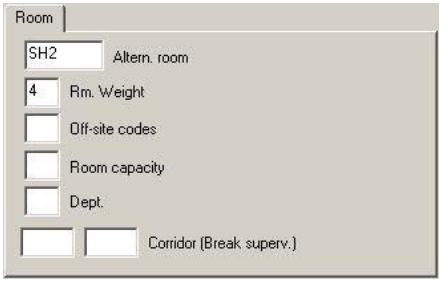
Do not print. When an element is marked Don't Print (N), the timetables and lesson overviews for this element will not be printed.

### Time Requests (Z)

This field is non-editable. The tick appears automatically as soon as a time request is entered for an element.

## Element-specific input fields

Depending on the master data element displayed on the screen, the software offers a variety of different input fields:




### Rooms

#### Alternative room

An alternative room is a room that is functionally equivalent to the specified (desired) room and that gp-Untis can use for scheduling purposes when the desired room is unavailable. Please see the chapter "Room logic" on p.278 for a detailed description of the alternative room function.

#### Room weighting

The room weighting gives an indication of the importance of a room for a particular lesson scheduled to take place in that room.

- Room weighting 0: gp-Untis can schedule lessons even when neither the desired room nor one of its alternative rooms are available (useful for lessons where no specific teaching aids are required).
- Room weighting 4: a lesson can only be scheduled if the desired room or one of its alternative rooms are available (e.g. PE classes).
- Room weighting 1-3: appropriate intermediate levels.

**Note**

Please note that the allocation of rooms is affected not only by the room weighting, but by the function "Room Optimisation". Please read the chapter "Room logic" on p.278 under "User tips".

**Off-site codes**

Off-site rooms are classrooms and specialist subject rooms not located in the main building of the school but at an external site too distant to reach within the space of a normal break. Enter the values 1 to 9 for off-site locations *with* start time graduation and the values A to E for off-site locations *without* start time graduation. Further details on the off-site function can be found in the chapter "Off-site rooms" on p.290.

**Room capacity**

Room capacity. Here you can enter the maximum student capacity for a particular room.

Please read the chapter "Room capacity" on p.280 under "User tips" before using the room capacity function.

**Dept.**

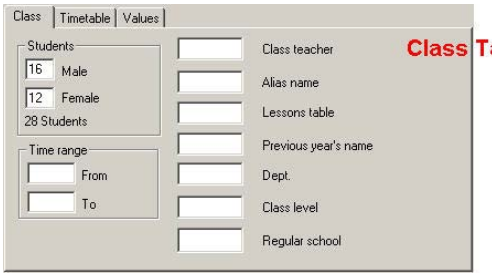
Department. Rooms may be allocated to a specific department. These details are largely for information only and allow printouts of timetables and/or room lists to be produced for individual departments.

**Corridor (Break superv.)**

Here you can enter up to two corridors for a particular room. These fields are only useful in connection with the additional module *Break Supervision*.

## Classes

The input fields for classes are categorised in tabs. Depending on the number of additional modules you have installed, the number of tabs displayed for master data elements may differ from the examples shown in this manual.




### Male/Female

These fields allow you to enter the number of male and female students (pupils) in a class. The two figures are added up automatically and displayed below the input fields.

These figures are only important for use with the room capacity function. For further details on the room capacity function, please see the chapter "Room capacity" on p.280 under "User tips".

### Class teacher

This field has no direct influence on any of the gp-Untis functions, but can be used for printing timetables (for display in the heading) and for some database links ("File | Import/Export | ...").

### Alias (second name)

For certain purposes, it may be desirable to use standardized designations instead of the usual names. Examples include printouts for local authorities and data exports to databases.

**Note**

Alias names can also be assigned to groups of classes, e.g. "3abc" for "3a+3b+3c".

Alias names can be entered via the relevant element or under "Master Data | Alias Names".

### Lesson Table

The lesson table is a useful tool for checking subject distribution in the module *Lesson Planning and Value Calculation*. The function can only be used in connection with that module.

### Previous year´s name

The class name from the previous year is required for use with the function <Last year's teacher>. Enter the name from the previous year for a class that will be taught by the same teacher for a second (consecutive) year. The function "Last year's teacher"

is only available in connection with the *Lesson Planning and Value Calculation* module.

**Dept.**

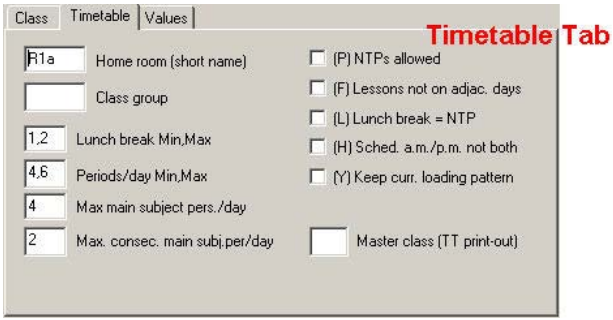
Department. Classes can be allocated to a particular department. This function is largely for information only and allows timetables and/or class lists to be printed specifically for individual departments. This function is particularly important for use with the *Department Timetable* module.

**Class level**

This function is only useful in connection with the modules *Lesson Planning and Value Calculation*, *Student Timetable* and *Course Planning*.

**Regular school**

For use with certain import/export interfaces.




**Home room**

This function allows you to enter the name of the classroom assigned to a particular class. Please see the chapter "Alternative rooms" under "User Tips" for details on classes without a designated classroom.

**Special class group**

This input field is designed specifically for use in Austrian teacher training colleges, British secondary schools, Belgian Gymnasiums

and German Realschulen where students have a choice between several main and minor subject areas (core and differentiation lessons) or several subject areas of equal standing.

Please do not enter any data in this field if you are in any way unsure about the exact meaning of the function. Please see a more detailed description of class groups on p.272 under "User tips".

**Lunch break Min, Max**

This function allows you to specify the maximum and minimum duration of the lunch break for individual classes.

For lunch breaks of exactly one hour, enter "1,1" (depending on your time grid).. If you want gp-Untis to schedule a lunch break of at least zero and at most two hours, enter "0,2". If lunch breaks are not desirable enter "0,0" and place a tick in the field "(L) Lunch break = NTP".

**Periods/day Min, Max**

Specify the minimum and maximum number of periods / lesson units the class should be taught per day.

For example, enter "4,6" for a class that should have at least 4 periods, but no more than 6 periods per day.

**Max Main subject pers./day**

You can specify which subject should be treated as main subjects by ticking "(M) Main subject". Use this field to specify how many main subject periods may be taught as a maximum on any one day.

**Max. consec. Main Subj. per/day**

This function determines how many main subject periods may be taught consecutively on any one day.

### (P) NTPs allowed

As a rule, NTP's (Non Teaching Periods) should be avoided at all cost. Possible exceptions are NTP's for pseudo classes and class components.

### (F) Lesson not on adjac. days

Use this function for part-time classes that do not have lessons every day of the week if you want to avoid scheduling lessons on consecutive days.

### (L) Lunch break = NTP

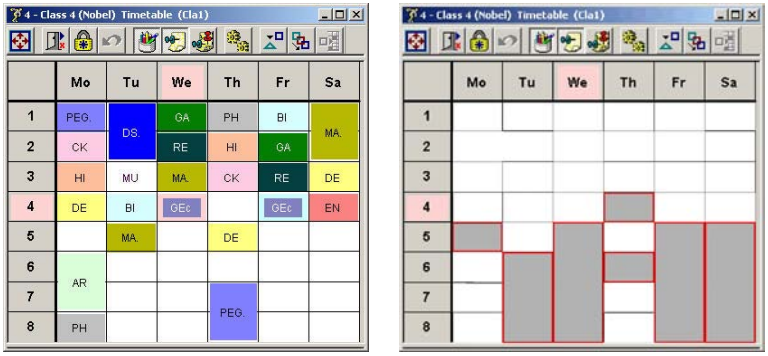
The lunch break should be regarded as a NTP. When this option is activated, the optimisation function will treat the lunch break as an undesirable window period, effectively cancelling the lunch break.

### (H) Sched. a.m./p.m. not both

This function ensures that lessons can only be scheduled for one half-day of the day, i.e. gp-Untis can allocate lessons either in the morning OR in the afternoon of the same day.

### (Y) Keep curr. loading pattern

Tick this option if you want to block the allocation of lessons before the first and after the last periods already scheduled (for use with a subsequent optimisation run).




Time grid showing permitted scheduling options for use with a subsequent optimisation run where option Y is activated (the last morning lesson is period 5, the first afternoon lessons is period 6).

This means that a subsequent optimisation run is not permitted to schedule lessons out of the range of already allocated lessons and NTP's. This function should be used for timetable changes where the non-contact periods of teachers and classes should remain unchanged to ensure that extracurricular activities are not affected by the new timetable.

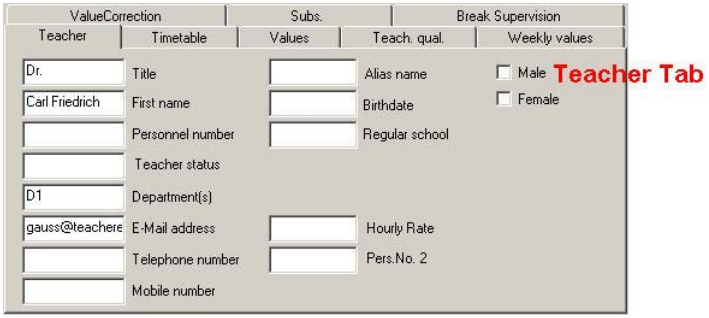
**Warning!**

**This function imposes considerable restrictions on subsequent optimisation runs and should not be activated lightly.**

### Master class (TT print-out)

Enter the same master class for type-separated class components if you want to print the timetable together in a single timetable. Please see the chapter "Type-separated class components" on p.270 under "User tips" and the chapter "Several classes on one timetable" on p.251 under "Timetable display" for further details.

## Teachers




### Title

This field is for information only and only affects printing and export.

### First name

Enter the first name of the teacher. gp-Untis uses this information on a variety of different printouts.

**Personnel number**

Enter the personnel/staff number only if this is required on printouts or transfer data for local authorities.

**Teacher status**

Use this field for special status information such as head teacher, librarian etc.

**Department(s)**

You can allocate any number of departments to an individual teacher. This function is particularly useful in connection with the *Department Timetable* module. It also allows you to print separate timetables for individual departments.

**Alias (second name)**

This function applies to teachers in the same way as it applies to classes: For certain purposes, it may be desirable to use standardised designations instead of the usual names. Examples include printouts for local authorities or data exports to databases. Alias names can be entered via the relevant element or under "Master Data | Alias Names".

**Birthdate**

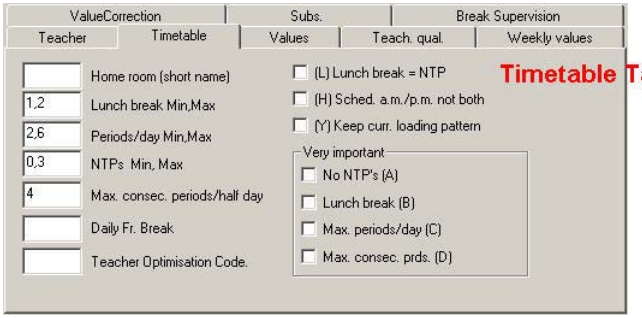
This field is for information only and only affects printing and export.

**Regular school**

This field is for information only and only affects printing and export.

**Male/Female**

This field is for information only and only affects printing and export.




### Home room

Use this field to assign a dedicated home room to a teacher.

### Lunch break Min,Max

Enter the minimum and maximum duration of lunch breaks for individual teachers.

### Periods/day Min,Max

The data in this field determines the minimum and maximum number of periods a teacher should teach each day. Enter "2,5" for a teacher who should teach between 2 and 5 periods per day. Leaving this field empty allows gp-Untis to schedule any number of periods for a teacher.

### NTPs Min,Max

Use this field to specify the minimum and maximum number of NTP's (frees, non-contact periods) per week for an individual teacher. An empty field is equivalent to the entry "0,0".

### Max. consec. Periods/half day

This field allows you to specify the maximum number of consecutive periods a teacher should teach before a NTP (break) is scheduled.

### Daily Fr. Break

In schools where lessons continue until evening, it is often desirable to specify the length of time between the last period in the evening and the first period in the morning to allow students and teachers a sufficiently long break between classes.

**Example**

The time grid of a school shows a total of 11 periods per day. On Monday, teacher X teaches until period 9. A value of "4" entered under "Daily Fr. Break" means that gp-Untis will attempt to schedule a total of 4 free periods for teacher X between Monday and Tuesday. No lessons will therefore be scheduled for teacher X on Tuesday, periods 1 and 2.

**(L) Lunch break = NTP**

The lunch break can be regarded as a NTP. When this option is active, the optimisation function treats the lunch break as an undesirable NTP effectively cancelling the lunch break.

**(H) Sched. a.m./p.m. not both**

This function ensures that lessons can only be scheduled for one half-day of the day, i.e. gp-Untis can allocate lessons either in the morning OR in the afternoon of the same day.

**(Y) Keep curr. loading pattern**

Activate this option if you want to block the allocation of a teacher before the first and after the last periods already scheduled for the half-day. This means that a subsequent optimisation run ignores the teacher for the periods out of the given range. Please see the example in the chapter "Master data properties | Classes" on p. 61.

**Very important**

The input block "Very important" allows you to specify different timetabling priorities for each individual teacher.

**No NTP´s (A)**

Activate this option to instruct the software to avoid scheduling NTP's for the teacher.

**Lunch break (B)**

Tick this box if you want gp-Untis to pay particular attention to lunch break compliance when constructing the timetable.

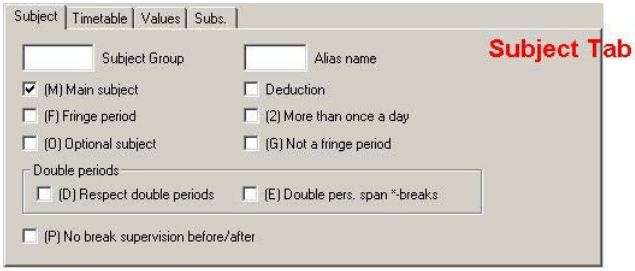
### Max. periods/day (C)

Activating this option ensures a high level of compliance with the specifications entered under "Periods per day min,max".

### Max. consec. prds. (D)

Activating this option ensures a high level of compliance with the specifications entered under "Max. consec. periods/half day". These are in half day blocks.

## Subjects




### Subject group

When entering teaching qualifications for teachers, you can either enter single subjects or entire subject groups. This field is therefore only relevant for use with the *Lesson Planning and Value Calculation* module.

### Alias name

For certain purposes (e.g. data export), it may be desirable to use standardized designations instead of the usual names. Alias names can be entered via the relevant element or under "Master Data | Alias Names".

### (A) In all classes

This field is only important in connection with the module "Lesson planning and value calculation".

**(M) Main subject**

Tick this box to categorize a subject as a main subject. For further details, please see the chapter "Main subjects" on p.295 under "User tips".

**(F) Fringe period**

Tick this option to categorize a subject as a fringe period subject. The attribute ensures that lessons of this subject are scheduled preferentially at the beginning or the end of a school day or half-day. Please see further details in the chapter "Free period and fringe period subjects" on p.296 under "User tips".

**(O) Optional subject**

This option allows you to categorize a subject as an optional (non-compulsory) subject. This means that lessons of this subject are scheduled preferentially at the beginning or the end of a school day or half-day. Please see further details in the chapter "Free period and fringe period subjects" on p.296 under "User tips".

**(2) More than once a day**

This option should only be used in special circumstances. When this option is active, the optimisation algorithm can schedule the subject in irregular intervals and even several times a day. Ticking this option deactivates the weighting settings for "The same subject cannot be taught more than once on the same day" and "Avoid errors with double periods".

**(G) Not in a fringe period**

Selecting this option causes the software to schedule lessons of this subject preferentially in the middle of a half-day, avoiding fringe periods.

**(D) Respect double periods**

**This option should only be activated in extreme circumstances. Please read the section "Lessons" before selecting this option.**

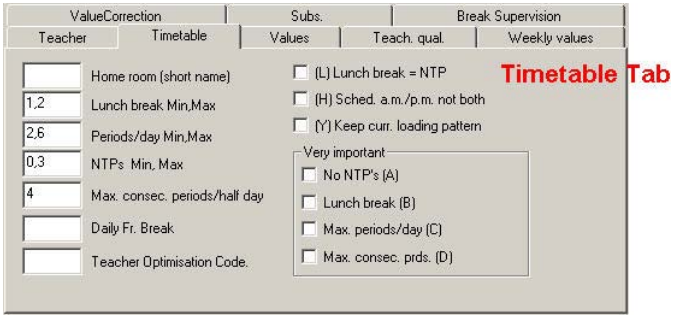
**Input block for double periods**

This function ensures that the automated optimisation tool will always schedule the number of permitted (or desirable) double periods. This option can be used to avoid splitting double periods or to force the software to schedule single periods.

- Please note that the correct treatment of double periods requires an appropriate input under option "Double periods Min,Max".
- This option is only effective when used sparingly and thoughtfully since it imposes considerable restrictions on the optimisation function, especially with regard to subjects with many double periods. Activate this function only when a previous optimisation run was unable to achieve the desired outcome and you have already increased the relevant weighting parameter ("Avoid errors with double periods") to "5".

### (E) Double periods are allowed to span *-breaks

Breaks marked with an asterisk (*) must not be bridged by double periods and will therefore affect the distribution of double periods. If this restriction is undesirable for a particular subject, simply untick this option.




### Subject room (short name)

This function allows you to specify subjects taught in dedicated subject rooms. Please see the chapter "Room logic" under "Timetable Optimisation" for further details.

### Afternoon pers./week (min,max)

The minimum and maximum number of afternoon periods for this subject. Use this field to specify the minimum and maximum number of periods per week that the subject should / must be scheduled in the afternoon.

**Periods/week (min,max)**

Minimum and maximum number of weekly subject periods. This function is only relevant for use with the *Lesson Planning* module where you can enter the minimum and maximum number of periods the subject should be taught per week (if at all). This option is not relevant for use with the standard package of the gp-Untis software.

**Subj. Sequ. - Teachers**

The numbers 1-9 direct the software to construct teacher timetables where subjects with the same number are scheduled in consecutive periods. The letters A-F, by contrast, prevent the software from scheduling subjects in consecutive periods. Please also see the chapter "Subject sequence" under "User tips".

**Subj. Sequ. - Classes**

The numbers 1-9 direct the software to construct class timetables where subjects with the same number are scheduled in consecutive periods. The letters A-F, by contrast, prevent the software from scheduling subjects in consecutive periods. Please also see the chapter "Subject sequence" under "User tips".

## Students

**"Student Timetable" module**

The *Student Timetable* module contains the additional master data element "Students". When this module is not installed, the menu item is deactivated.

## Departments

**"Department Timetables" module**

You can assign each master data element to a department (teachers can be assigned to any number of departments). This is an important function for use with the module *Department Timetable*. When this module is not installed, the department name will only be used for information and on printouts. The function also allows timetables to be printed separately for individual departments.

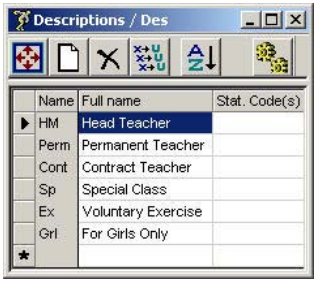
## Corridors

**"Break Supervision" module**

The module *Break Supervision* for scheduling break supervision in corridors requires the user to specify the corridors to be supervised. The menu item can only be used in connection with the *Break Supervision* module.

## Descriptions

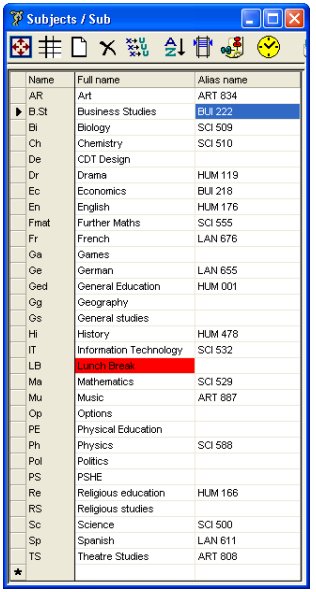
Descriptions are master data in their own right and have their own abbreviated and full names. Descriptions are useful when the same denomination refers to several different elements.




| | Name | Full name | Stat. Code(s) |
|---|---|---|---|
| ▶ | HM | Head Teacher | |
| | Perm | Permanent Teacher | |
| | Cont | Contract Teacher | |
| | Sp | Special Class | |
| | Ex | Voluntary Exercise | |
| | Grl | For Girls Only | |
| * | | | |

The full name of a description can consist of a slightly longer text. For other master data, it is sufficient to enter the abbreviated name of a description. This allows the user to choose between abbreviated and full name when selecting a description for printouts or views.

For example, the descriptions in our demo file serve to clarify the employment status of different teachers (full-time employed, part-time, supply, etc.).




| | Name | Full name | Alias name |
|---|---|---|---|
| | AR | Art | ART 834 |
| ▶ | B.St | Business Studies | BUI 222 |
| | Bi | Biology | SCI 509 |
| | Ch | Chemistry | SCI 510 |
| | De | CDT Design | |
| | Dr | Drama | HUM 119 |
| | Ec | Economics | BUI 218 |
| | En | English | HUM 176 |
| | Fmat | Further Maths | SCI 555 |
| | Fr | French | LAN 676 |
| | Ga | Games | |
| | Ge | German | LAN 655 |
| | Ged | General Education | HUM 001 |
| | Gg | Geography | |
| | Gs | General studies | |
| | Hi | History | HUM 478 |
| | IT | Information Technology | SCI 532 |
| | LB | Lunch Break | |
| | Ma | Mathematics | SCI 529 |
| | Mu | Music | ART 887 |
| | Op | Options | |
| | PE | Physical Education | |
| | Ph | Physics | SCI 588 |
| | Pol | Politics | |
| | PS | PSHE | |
| | Re | Religious education | HUM 166 |
| | RS | Religious studies | |
| | Sc | Science | SCI 500 |
| | Sp | Spanish | LAN 611 |
| | TS | Theatre Studies | ART 808 |
| * | | | |

## Alias Names

For many purposes, it may be desirable to use standardized designations instead of the usual master data element names.

- Standardized subject designations for printouts for local authorities
- Standardized names for database links to local authorities
- Printouts of timetables

If you wish to use alias names on printed timetables, tick the option "Timetable" and activate the relevant option in the appropriate timetable views (see the chapter "Timetable period" on p.228).

## School Holidays

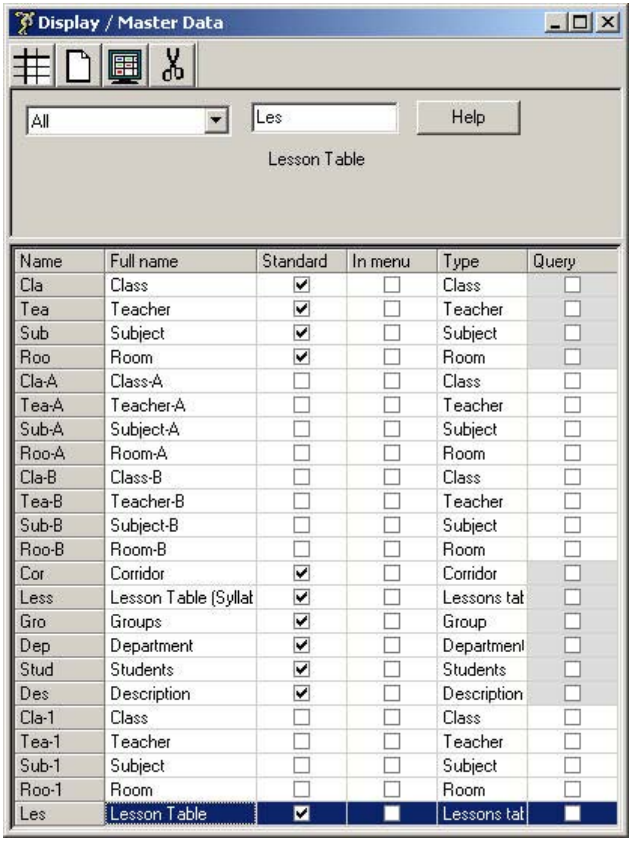
The School Holidays function allows you to enter holiday dates to ensure the correct weekly display of timetables. The function is also relevant for use with the additional modules *Cover Planning, Lesson Planning and Value Calculation* and *Multi-Week Timetables*. Disregard this function if you are not using these modules.

## Reasons of absence

This function can be used for describing reasons of absence. The function is only relevant for use with the module *Cover Planning*.

## Display - Master data

The list of predefined master data views is accessible via the menu item "Display - Master Data". For further details on how to create new views, modify existing views and include views in the menu, please see the appropriate chapters under "The master data views" on p.35.




| Name | Full name | Standard | In menu | Type | Query |
|---|---|---|---|---|---|
| Cla | Class | ☑ | ☐ | Class | ☐ |
| Tea | Teacher | ☑ | ☐ | Teacher | ☐ |
| Sub | Subject | ☑ | ☐ | Subject | ☐ |
| Roo | Room | ☑ | ☐ | Room | ☐ |
| Cla-A | Class-A | ☐ | ☐ | Class | ☐ |
| Tea-A | Teacher-A | ☐ | ☐ | Teacher | ☐ |
| Sub-A | Subject-A | ☐ | ☐ | Subject | ☐ |
| Roo-A | Room-A | ☐ | ☐ | Room | ☐ |
| Cla-B | Class-B | ☐ | ☐ | Class | ☐ |
| Tea-B | Teacher-B | ☐ | ☐ | Teacher | ☐ |
| Sub-B | Subject-B | ☐ | ☐ | Subject | ☐ |
| Roo-B | Room-B | ☐ | ☐ | Room | ☐ |
| Cor | Corridor | ☑ | ☐ | Corridor | ☐ |
| Less | Lesson Table (Syllat | ☑ | ☐ | Lessons tat | ☐ |
| Gro | Groups | ☑ | ☐ | Group | ☐ |
| Dep | Department | ☑ | ☐ | Department | ☐ |
| Stud | Students | ☑ | ☐ | Students | ☐ |
| Des | Description | ☑ | ☐ | Description | ☐ |
| Cla-1 | Class | ☐ | ☐ | Class | ☐ |
| Tea-1 | Teacher | ☐ | ☐ | Teacher | ☐ |
| Sub-1 | Subject | ☐ | ☐ | Subject | ☐ |
| Roo-1 | Room | ☐ | ☐ | Room | ☐ |
| Les | Lesson Table | ☑ | ☐ | Lessons tat | ☐ |

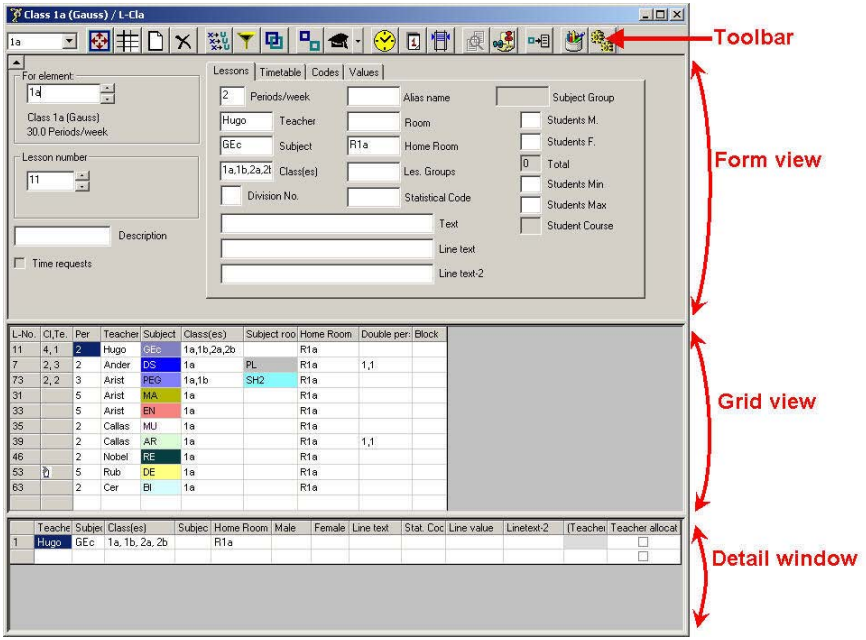
# Lessons

If you are unfamiliar with the gp-Untis software programme, you should initially use only the fields displayed by default in the grid view. Progress to the timetable-defining special options only after you have gained some experience in the use of the optimisation tool and even then use the options sparingly.

## The lesson window

The lesson window is a view in its own right. This means that the general details on window management set out in the chapter "Master data views" apply equally to the lesson window.

Open the standard views of lessons sorted by class or teacher via the menu items "Lessons | Classes" or "Lessons | Teachers", respectively.



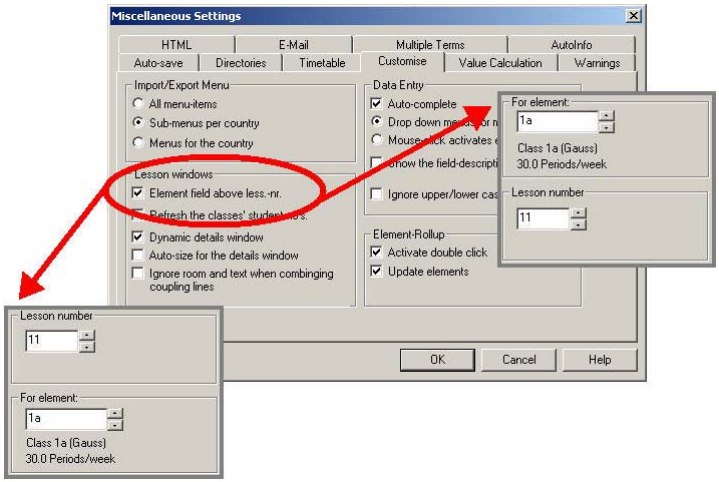
- Start gp-Untis and load the file *demo.gpn*.
- Open the standard view of lessons sorted by class ("Lessons | Classes").

The display on the screen should correspond approximately to the example on the left.

The window consists of four main components – the tool bar, the form view, the grid view and the detail window. The tool bar functions are described in detail in a later chapter.

The functions of the form and grid views are identical to those in the master data windows. The form view displays a particular lesson complete with all its associated attributes. The grid view contains a row per lesson where the selected lesson attributes are displayed. In the master data window, the software programme identifies master data by element name. In the lesson window, this function is carried out by the automatically created lesson number (this number cannot be modified).

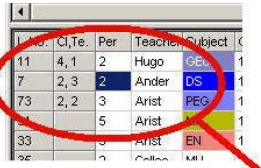
You can specify which one of the two - the lesson number or the element name – should be displayed first on the form view. The relevant settings can be found on the "Customise" tab under "Settings | Miscellaneous".



Since one row may not offer sufficient space for the display of all the details of coupled lessons, these are displayed in greater detail in the details window.

▶ Activate lesson 7 using the previous example.

The second column of the grid view shows that the lesson is a coupled lesson involving two classes and three teachers (2,3). The grid view, however, only displays the name of teacher Ander and the class 1a.



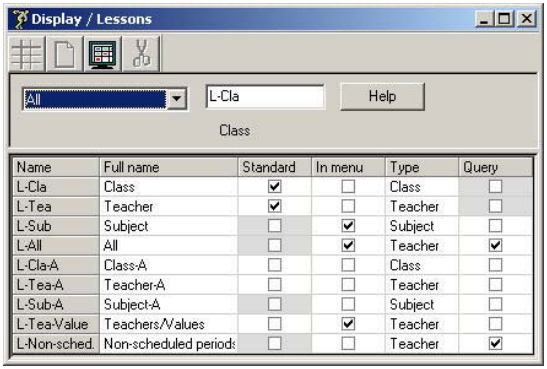
Full details are provided in the lessons details window instead. The details window displays one row per teacher involved in the coupled lesson and contains complete details on subject, class and classroom for each teacher.

**Lesson details in the Lesson details window**

| | Teacher | Subject | Class(es) | Subject | Home Room | Male |
|---|---|---|---|---|---|---|
| 1 | Ander | DS | 1a | PL | R1a | |
| 2 | Gauss | DS | 1b | PL | R1a | |
| 3 | Curie | TX | 1a, 1b | CL | | |

## Predefined views

Access the lesson view dialogue via the menu item "Lessons | Display - Lessons".



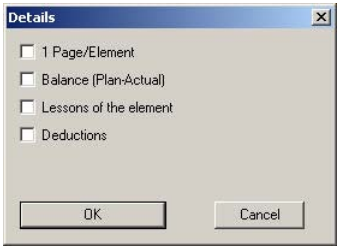

| Name | Full name | Standard | In menu | Type | Query |
|---|---|---|---|---|---|
| L-Cla | Class | ☑ | ☐ | Class | ☐ |
| L-Tea | Teacher | ☑ | ☐ | Teacher | ☐ |
| L-Sub | Subject | ☐ | ☑ | Subject | ☐ |
| L-All | All | ☐ | ☑ | Teacher | ☑ |
| L-Cla-A | Class-A | ☐ | ☐ | Class | ☐ |
| L-Tea-A | Teacher-A | ☐ | ☐ | Teacher | ☐ |
| L-Sub-A | Subject-A | ☐ | ☐ | Subject | ☐ |
| L-Tea-Value | Teachers/Values | ☐ | ☑ | Teacher | ☐ |
| L-Non-sched. | Non-scheduled periods | ☐ | ☐ | Teacher | ☑ |

Much like the master data views, the lesson views offer standard views and a queries function. The view "L-All" deserves particular mention. Per default setting, this view shows a complete listing of all the lessons entered for your school.

## Printing

The print function in the lesson views works in exactly the same way as the print function in the master data views.

The lesson views offer the following additional settings relevant only for lesson views. These can be accessed via <Details> under "Print selection".




- Select *1 Page/Element* if you want the lessons of different elements (teachers or classes) to be printed on separate pages.
- Tick the option *Balance (Plan-Actual)* if you want to include balance data on an additional row on printouts.
- The option *Lessons of the element* suppresses the printout of rows not relevant for the active element of coupled lessons.

Gauss Gauss

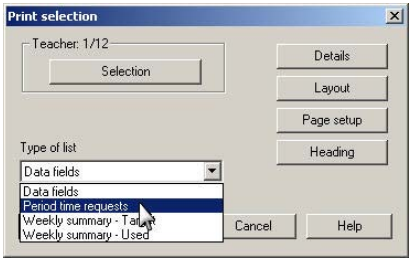
| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Hom |
|---|---|---|---|---|---|---|---|
| 6 | 3,7 | 1 | Callas<br>Gauss<br>Ander<br>Rub<br>Hugo<br>Nobel<br>?-1 | CH<br>MA<br>MA<br>EN<br>EN<br>DE<br>DE | 2a,2b,3a<br>2a,2b,3a<br>2a,2b,3a<br>2a,2b,3a<br>2a,2b,3a<br>2a,2b,3a<br>2a,2b,3a | | R2a<br>R2b<br>R3a<br>Ps1<br>Ps1<br>Ps2 |
| 7 | 2,3 | 2 | Ander<br>Gauss<br>Curie | DS<br>DS<br>TX | 1a<br>1b<br>1a,1b | PL<br>PL<br>CL | R1a<br>R1a |
| 1 | | 4 | Gauss | MA | 3a | | R3a |
| 3 | 1,2 | 2 | Gauss<br>Curie | GA<br>TX | 3a<br>3a | <br>CL | R3a |
| 4 | 1,2 | 2 | Gauss<br>Curie | GA<br>TX | 3b<br>3b | <br>CL | Ps1 |
| 5 | | 2 | Gauss | GA | 4 | | Ps2 |
| 82 | 1,2 | 4 | Ander<br>Gauss | MA<br>MA | 4<br>4 | | Ps2 |

Printout with coupled rows

Gauss Gauss

| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Home Room | Double pers. | Block |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 3,7 | 1 | Gauss | MA | 2a,2b,3a | | R2b | | |
| 7 | 2,3 | 2 | Gauss | DS | 1b | PL | R1a | 1,1 | |
| 1 | | 4 | Gauss | MA | 3a | | R3a | | |
| 3 | 1,2 | 2 | Gauss | GA | 3a | | R3a | 0,1 | |
| 4 | 1,2 | 2 | Gauss | GA | 3b | | Ps1 | 1,1 | |
| 5 | | 2 | Gauss | GA | 4 | | Ps2 | 0,1 | |
| 82 | 1,2 | 4 | Gauss | MA | 4 | | | | |

View with "Lessons of the element" activated




- Tick the option *Deductions* if you want to include deductions in the printout of the lessons. This is only important with the module *Lesson Planning*.

You can also print out the time requests for the individual lessons.

## Entering lessons

Lessons can be entered in the form or in the grid view.

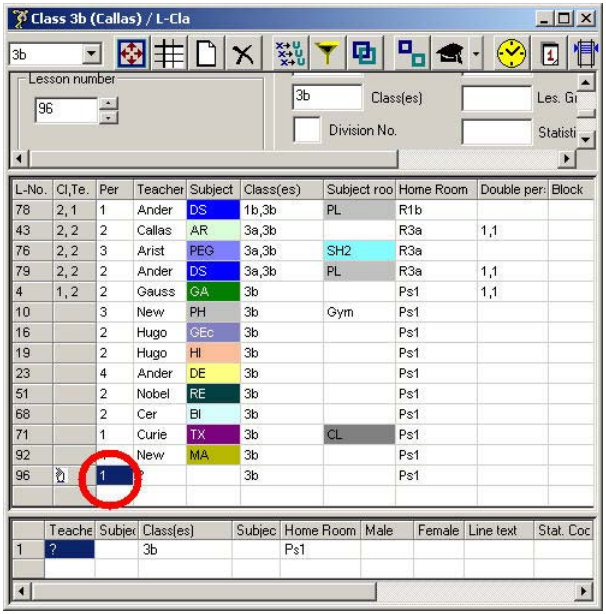
### Entering lessons in the grid view

The following examples demonstrate how to enter new lessons in the grid view.

#### Entering a simple lesson




- Start gp-Untis and load the file *demo.gpn*.
- Open the lesson view for classes ("Lessons | Classes") and switch to the element 3b.
- Enter the number "1" in the last (empty) row of the grid view under "Per." (periods per week) and confirm the selection by pressing <Tab>, <Enter> or one of the cursor keys (see example).




A new lesson has been added to the display. Since you created the lesson using the active element 3b, the software automatically entered 3b under "Class(es)" and Ps1 (home room of class 3b) under "Home Room").

- Enter the name *New* under Teacher and the subject *EN* under Subject.

The programme now has all the necessary information for this lesson: The teacher Newton teaches English (EN) to class 3b for one period per week (see example on the following page).




The symbol in the second column indicates that the English lessons for class 3b have not been scheduled yet. Please see further details under section "Manual Timetabling" on p.146.

### Entering coupled lessons - coupled classes

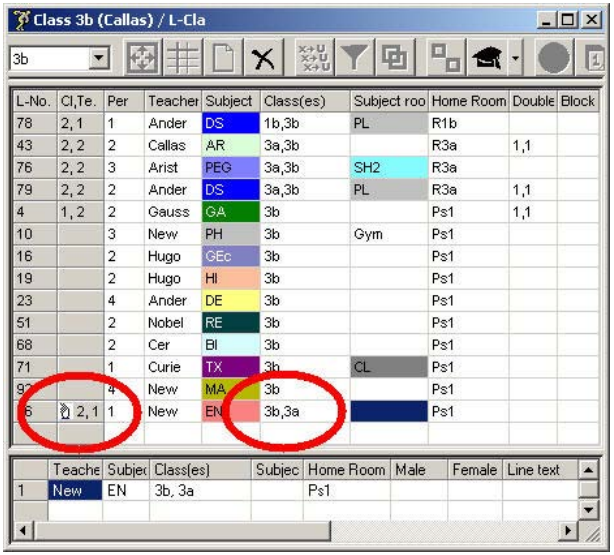
When more than one teacher, class or classroom are involved in a lesson, the lesson is referred to as a coupled lesson. The following example shows how the students of classes 3a and 3b are combined into a coupled class for the English lesson previously created.

**Several teachers and several classes involved in one lesson**

- Activate the newly created lesson 96 from the previous example (New, 3b, EN).
- Enter 3a under "Classes" after 3b, separated by a comma, and press <Enter>.

You have assigned the additional class 3a to lesson 96. The (grey) column "Cl(asses), Te(achers)" now contains the data "2,1". And the details window now displays both classes involved in the lesson.

This means that English teacher Newton teaches both classes 3b and 3a simultaneously for one period per week.

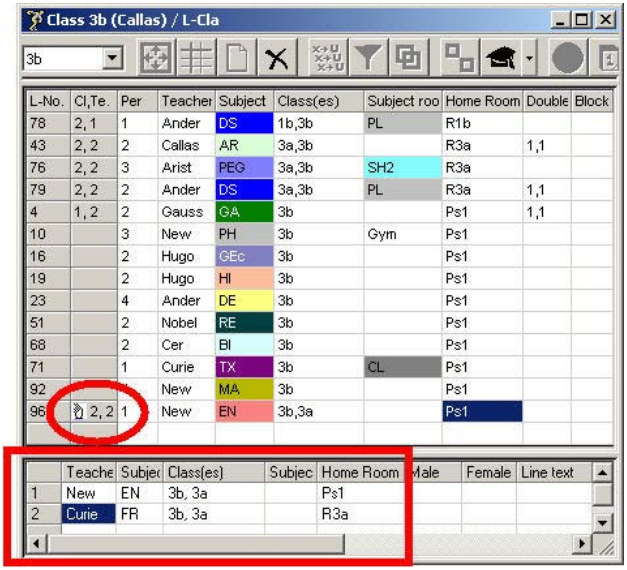



**2 Classes, 1 Teacher**

### Entering coupled lessons - coupled teachers

When more than one teacher is involved in a lesson, the teachers are referred to as coupled teachers.

- Activate the modified lesson 96 from the previous example (New, 3b, 3a, EN).
- Enter Curie under "Teachers" in the second row of the details window and press <Tab>.




You have assigned the teacher Curie to lesson 96. Now enter data in the remaining fields in this row in the lesson details window, e.g. French FR (this element must first be created), 3a and 3b, and R3a (the desired classroom).

gp-Untis now interprets the lesson as follows: Teacher Newton teaches the subject English to students from both classes 3a and 3b for one period per week, while teacher Curie teaches the subject French to the remaining students of classes 3a and 3b at the same time.

**2 Classes, 2 Teachers**

Using the method described above, you can create couplings of any kind.

Please note the following coupling rules:

- Always use one row per teacher in the lesson details window.
- In each teacher row, under Class(es), enter all the classes involved.
- Enter a different room for each teacher requiring a separate room.

## Entering lessons via Drag&Drop

**Element-Rollup**

You can also enter lesson data using the Drag&Drop technique.

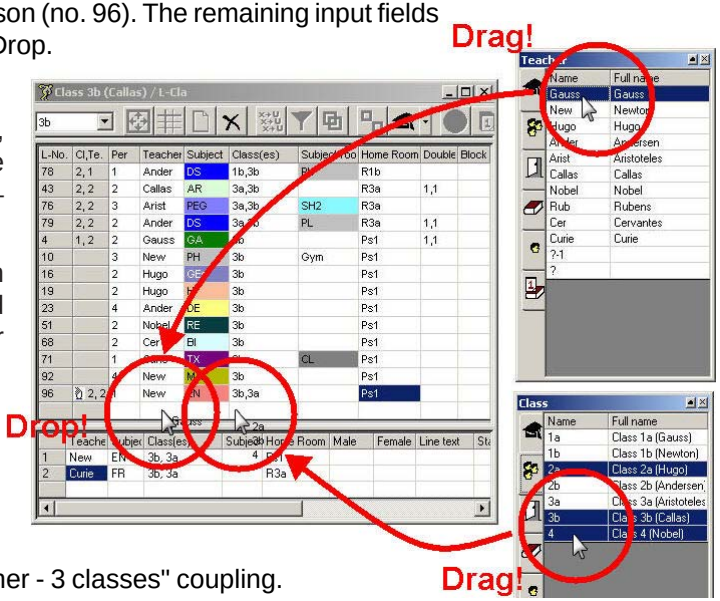
**Example**

Entering a new lesson:

- First, drag the name Gauss (teacher) from the element-rollup and drop it under Teacher in the last (empty) row of the grid view in the lesson window (see example on the following page).

You have created a new lesson (no. 96). The remaining input fields can also be filled via Drag&Drop.

- Select the classes 2a, 3b and 4 from the element-rollup (via Ctrl – left mouse click).
- Drag the classes from the element-rollup and drop them under Class(es) of lesson 96.




You have created a "1 teacher - 3 classes" coupling.

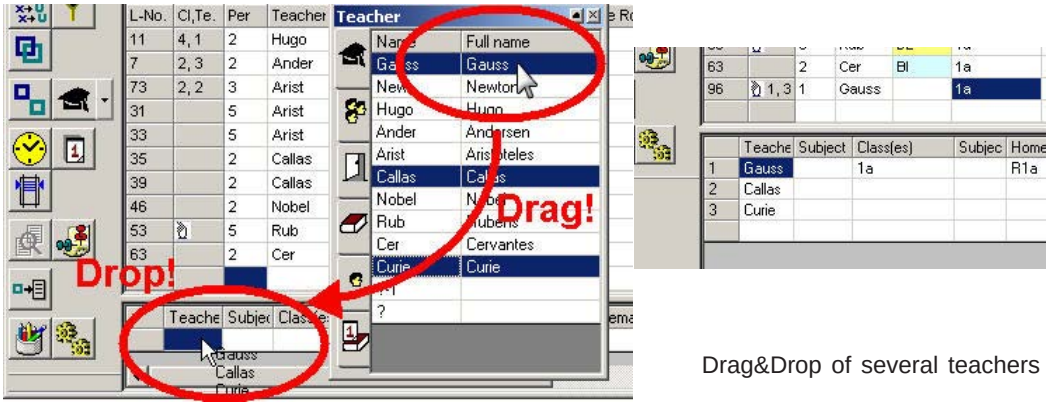
- Complete the data entry for this lesson by entering a suitable subject.

You can select several teachers simultaneously from the element window, but please note:

- When dropping the teacher list *in the grid view* of the lesson window (central part), you will create several single lessons simultaneously.
- By contrast, when dropping the teacher list *in the lesson details window* you will create a coupled lesson.

**Creating a new lesson with several teachers**

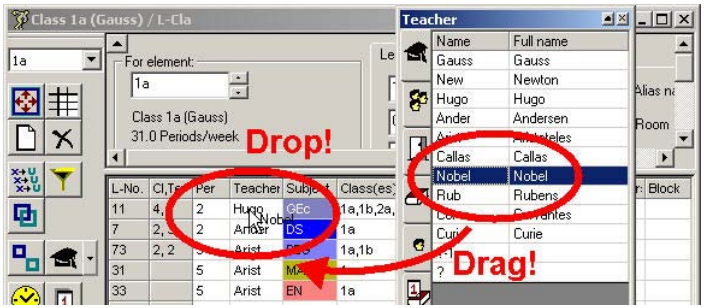
- Click on an empty row in the lesson window.
- Select the teachers Gauss, Callas and Curie from the element window (via Ctrl –left mouse).
- Drag the three names from the element window and drop them under Teachers in the lesson details window (see example on the following page).




Drag&Drop of several teachers

**Modifying the course catalogue**

Assume that while checking the lessons (i.e. the course catalog), you discover that you have accidentally assigned teacher Hugo instead of teacher Nobel to teach Geo to the first and second year classes. Correct this error by taking the following steps:




- Open the element window (if not already open).
- Drag the name Nobel from the element window to the lesson window.
- Drop the name in the row for lesson 11 under Teacher.

Replacing a teacher using Drag&Drop via the Element-Rollup

### Double click

Instead of using Drag&Drop, you can also manage the element window by double clicking on the desired data.

Using the previous example where teacher Hugo should be replaced with Nobel for the Geo lessons for first and second year classes, proceed as follows:

- In the lesson window, click on the row of lesson 11 under Teacher. This field is now active.

- Immediately afterwards, double click on Nobel in the element window.

**Note**

You can deactivate the double click function for entering data in the last active cell (for example if you are worried about accidental erroneous entries) by changing the settings on the "Customise" tab under "Settings | Miscellaneous".

## Entering lessons in the form view

This section describes how to enter new lessons in the form view.

### Entering a simple lesson

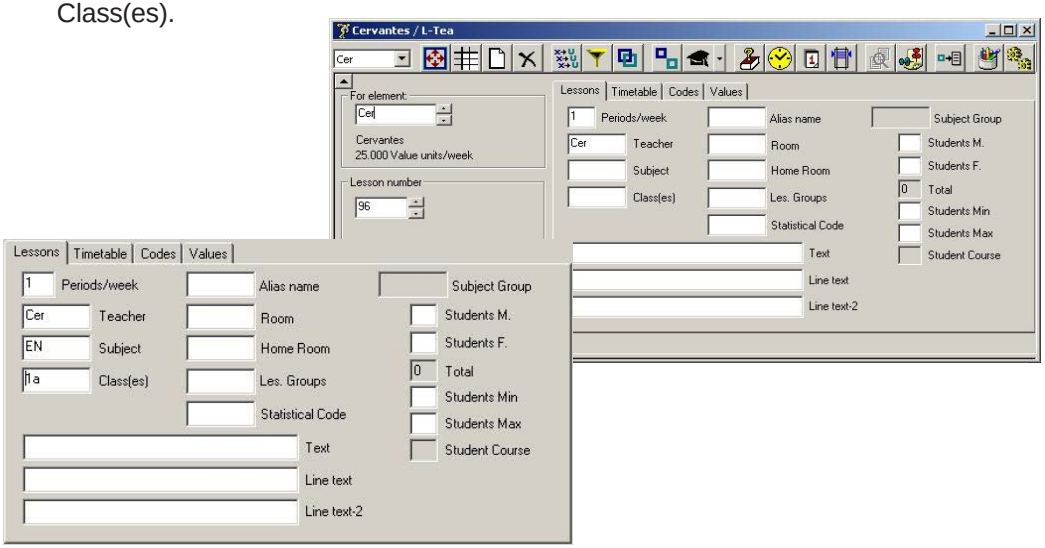
**Example**

- Start gp-Untis and load the file *demo.gpn*.
- Open the lesson view for teachers ("Lessons | Teachers") and switch to teacher Cer.
- Click on the button <New>.

**New**

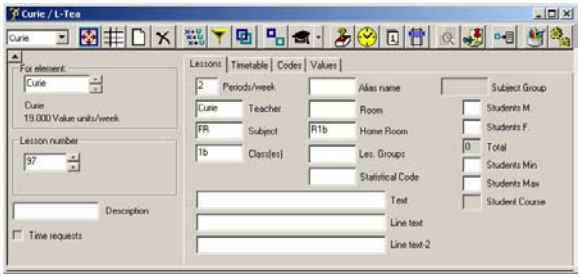
You have created a new lesson (no. 96).

- Finish by entering mandatory data under Per, Subject and Class(es).



## Coupling existing lessons

- Use the previous example and enter a new lesson for teacher Curie: 2 periods per week, subject FR (element must first be created), class 1b.

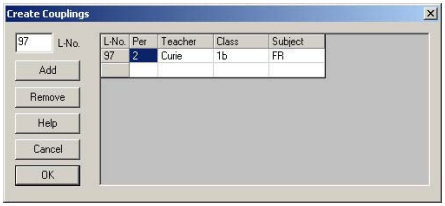



The aim is to couple the French lesson of teacher Curie with the English lesson of teacher Cervantes.

- Activate the new lesson of teacher Curie (lesson 97).
- Click on <Create Couplings>.

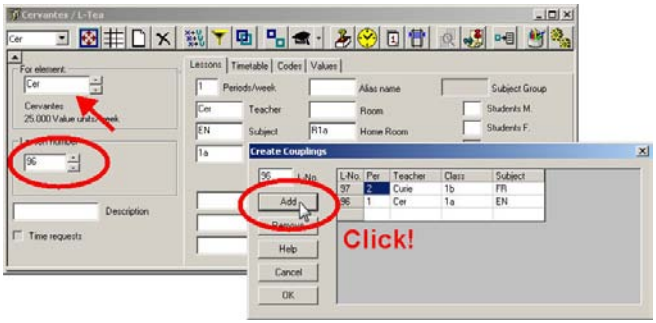
### Create couplings

- The coupling dialogue appears. As you can see, the active lesson 97 is already displayed on the list.




- Switch the lesson view to teacher Cer and lesson 96.

This number is now also active in the coupling dialogue.




- Click on <Add>.
- The lesson number 96 now appears in the couplings list underneath lesson 97.
- Close the coupling window by clicking on <OK>.

The originally separate lessons taught by Cervantes and Curie now appear as a single lesson with the same lesson number.

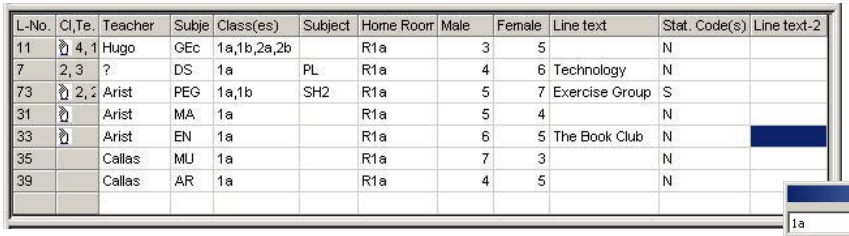
| | Teacher | Subject | Class(es) | Subject | Home Room | Male | Female | Line text | Stat. Cod | Line value |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cer | EN | 1a | | R1a | | | | | |
| 2 | Curie | FR | 1b | | R1b | | | | | |

Use the button <Extended de-coupling> to decouple the individual coupling rows to form single lessons. For a detailed description of this function, please see the chapter "The tool bar functions" below.

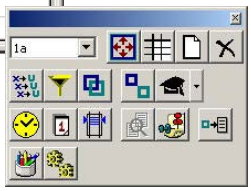
**Extended de-coupling**

### Entering data in the lesson details window

The data in the lesson detail window can be edited at any time.



| L-No. | Cl,Te. | Teacher | Subje | Class(es) | Subject | Home Room | Male | Female | Line text | Stat. Code(s) | Line text-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 4, 1 | Hugo | GEc | 1a,1b,2a,2b | | R1a | 3 | 5 | | N | |
| 7 | 2, 3 | ? | DS | 1a | PL | R1a | 4 | 6 | Technology | N | |
| 73 | 2, 2 | Arist | PEG | 1a,1b | SH2 | R1a | 5 | 7 | Exercise Group | S | |
| 31 | | Arist | MA | 1a | | R1a | 5 | 4 | | N | |
| 33 | | Arist | EN | 1a | | R1a | 6 | 5 | The Book Club | N | |
| 35 | | Callas | MU | 1a | | R1a | 7 | 3 | | N | |
| 39 | | Callas | AR | 1a | | R1a | 4 | 5 | | N | |




You can also enter new teacher data for coupled lessons.

## The tool bar functions

The functions of the lesson window tool bar are similar to the tool bar functions of the master data windows.

### Resizing the window

The function of this button is similar to that in the master data window. The first click resizes the frame to the size of the grid view, the second click to that of the form view. The third click, by contrast, resizes the frame to the width of the lesson details window (shortcut: Alt Gr-left mouse click), and the fourth click on the button restores the original size of the window.

**Resize Window**

The option "Auto-size for the details window" under "Settings | Miscellaneous" allows you to specify if the third click on this button should simultaneously adjust the height of the lesson details window.

**Note**

### Grid Adjustment Dialogue

A detailed description of the functions of the grid adjustment dialogue can be found in the chapter "The master data views".

**Grid Adjustment**

## New (Creating a new lesson)

**New**

Use this button to create a new lesson. Details can be found in the chapter "Entering lessons" on p.81.

## Deleting lessons

**Delete**

Deletes individual lessons.

Alternatively, click on the lesson in the grid view (or select several lessons by highlighting them) and use the "Cut" function (e.g. Ctrl - X).

## Serial Change (Replace All)

**Serial-change**

Please see a detailed description of this function in the chapter "The master data views".

## Filter

**Filter**

This function enables you to limit the list of displayed lessons to lessons with a specific attribute.

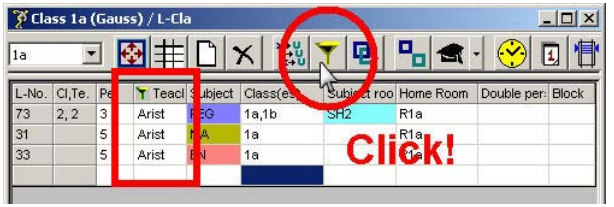
**Example**

- Start gp-Untis and load the file *demo.gpn*.
- Open the lesson view for classes ("Lessons | Classes") and switch to class 1a.

You want to find out which lessons teacher Arist teaches to class 1a.

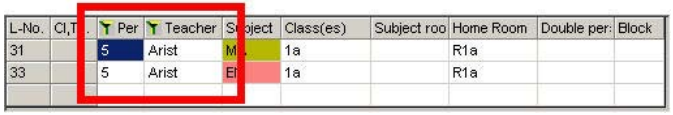
- In the grid view, click on Arist under Teacher and click on <Filter>.

The grid now displays only the rows for Arist. The symbol in the heading of the Teacher column indicates that the view is currently filtered by teacher.



You can even combine several filter criteria:

- In the grid view under Per, click on a lesson with 5 periods per week and click on <Filter>.



| L-No. | Cl,T | Per | Teacher | Subject | Class(es) | Subject roo | Home Room | Double per: | Block |
|---|---|---|---|---|---|---|---|---|---|
| 31 | | 5 | Arist | M | 1a | | R1a | | |
| 33 | | 5 | Arist | E | 1a | | R1a | | |

The view now displays all of teacher Arist's lessons with 5 periods per week.

## Coupling lessons

Use this function to couple lessons. A detailed description can be found in the chapter "Entering lessons" on p.76.

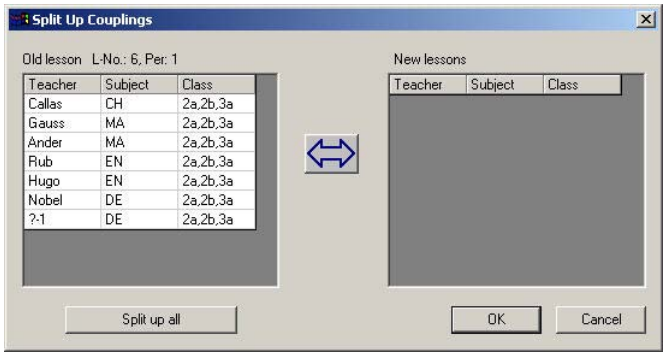



## Decoupling lessons (Split Up Couplings)

This function enables you to decouple individual coupled lessons and create single lessons (with their own lesson numbers) instead.




If you want to decouple all the components, including the class couplings, and skip the intermediate step via the decoupling window, hold down the Ctrl key while simultaneously clicking on <Extended de-coupling>.




## Teacher suggestion

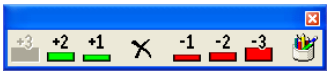
This button is only active when using the module *Lesson Planning*. A detailed description of this function can be found in the *Lesson Planning* manual.



## Time requests

**Time requests**

Please see the chapter "Time requests" under "User tips" for further details on this function.




The time request +3 (core time, i.e. "a lesson must be scheduled at this time") is deactivated (greyed out) since this particular option is managed more efficiently by the much more suitable "scheduling dialogue" and "scheduling timetable" tools. The section "Manual Timetabling" describes how to use the scheduling tools to lock lessons to ensure that a specific lesson takes place at a specific time.

## Show all fields with content

**Show fields with content**

A detailed description of this function can be found in the chapter "The master data views" on p.50.

## Lesson comparison

**Lesson-comparison**

This function is only active when using different terms (i.e. with the module *Term Timetable*).

## Lock (form) view

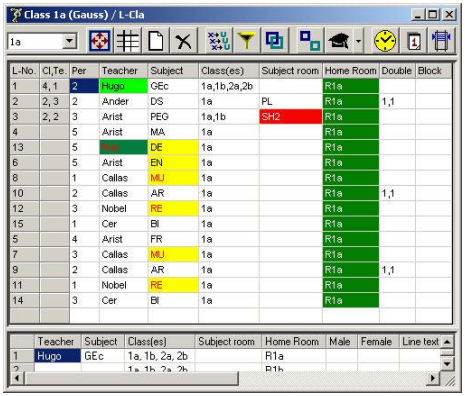
**Lock view**

The use of this function is described in detail in the chapter "The master data views" on p.50.

## Colour coding

**Colour**

(Colour coding of lessons)




The button <Colour coding> can be used to assign different foreground and background colours to individual lessons. As with the master data, the selected colours are displayed on the screen and used by the scheduling tools.

The selected lesson colour is displayed in the grid view under Periods/week.

## Settings




Use the <Settings> button to customise the grid view in the lesson window to suit your personal preferences.



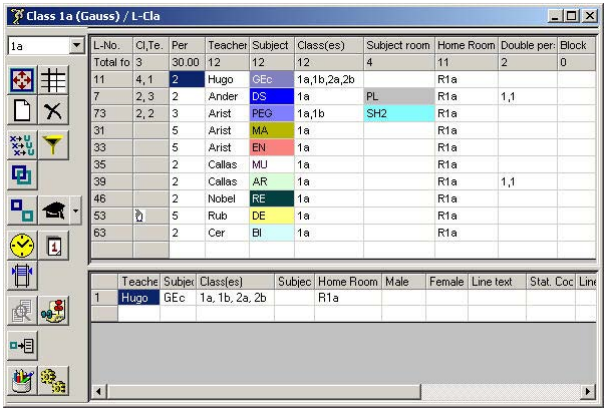

- *One week* – this combo box is only active when using the module *Multi-Week Timetable.*
- *Show inherited codes* – this option only affects the "Codes" field. A more detailed description can be found on p.97.
- *Show total* – select this setting to display a row for total sum below the heading row of the grid view. The "Show total" row shows the sum of individual numerical fields. For non-numerical fields, the row shows the number of data entries.

### Example

- Start gp-Untis and load the file *demo.gpn*.
- Close all open windows (Ctrl - K) and open the lesson view for classes ("Lessons | Classes"). Switch to class 1a.
- Under <Settings>, activate the option "Show total".

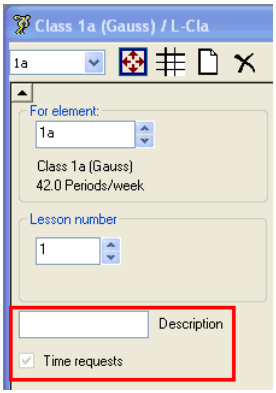
You can see at one glance that the class 1a is scheduled to have a total of 30 periods per week and that 12 teacher fields and 4 room fields have been filled in (coupled rows included in the count).

For purposes of clarity, the tool bar in the example was moved to the left side of the window.



## Input fields

Data can be entered in either the grid view or the form view. This chapter describes the different input options for the form view of the lesson window. The input fields may vary slightly depending on the module you are using.



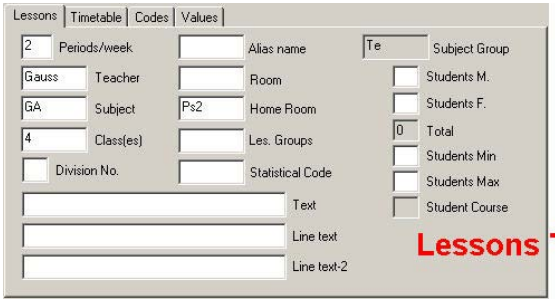

### Description

Used to assign a description to a lesson (same as with master data elements).

### Time requests

This box automatically receives a tick when a time request is entered for a lesson.

## The "Lessons" tab




### Periods/week

Enter the number of periods per week for the active lesson.

### Teacher

The teacher assigned to the active lesson. For coupled lessons, this field displays the first coupled teacher.

### Subject

The subject taught.

### Class(es)

The class(es) involved in the active lesson. For class couplings, enter the individual classes separated by commas.

**Division No.**

The division number ensures that the number of weekly periods can be calculated correctly even when the class has been divided into multiple groups. This could be the case for subject lessons where the lessons are not coupled, i.e. do not take place at the same time. The view would display 2 lesson rows, with for instance, 4 periods each. The total number of class periods however, would still only add up to 4 periods.

**Note**

When the two lesson rows (lesson numbers) have the same division number (permitted range: 0 - 255), the software calculates the number of units used based on the method described above. A lesson with division number 0 does not affect the total number of class periods.

**Note**

You can assign the same division number to more than 2 lesson rows of a class. The software will then use the largest number of periods of these division elements and add it to the total sum.

**Alias name**

Used to assign an alias name to a lesson. Further details can be found in the section "Master Data".

**Room**

Use this function to assign a specific room to a particular lesson. When a subject already has a designated specialist subject room, that room is adopted automatically when a lesson is created.

**Home Room**

If you enter lessons via "Lessons | Classes" the home room of the class will be automatically entered.
If you enter lessons via "Lessons | Teachers" the teacher's home room will be automatically entered.

**Group (Lessons Groups / Assigned Lesson Groups)**

**Additional module *Multiweek Timetable***

For use with the *Multi-Week Timetable* module. Allows you to enter a lesson group. For further details, please see the manual "Multi-Week Timetable & Term Timetable".

### Statistical Code

The identical function as for master data. Assign any number of statistical codes to a lesson. The codes are particularly useful in connection with the queries function.

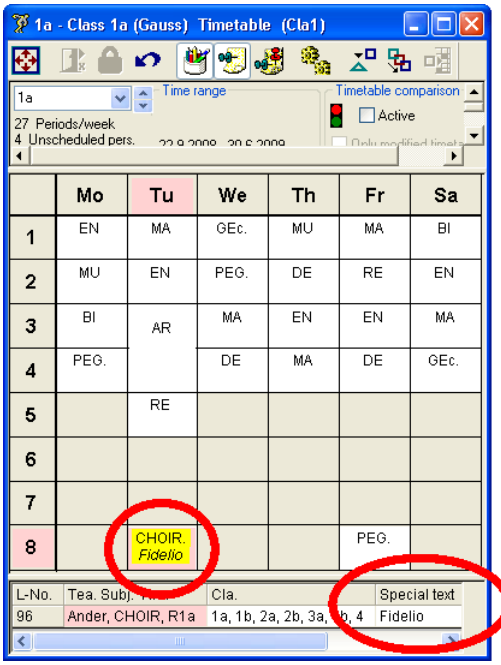
### Subject Group

**Additional module**
***Lesson planning***

This field displays the subject group to which a subject belongs (if assigned). The use of subject groups is particularly useful in connection with teacher qualifications (qualification to teach a subject) and with the syllabus (module *Lesson Planning*).

### Students M./Students F./Total

Enter the number of male and female students participating in the active lesson. The sum of the two entries is shown in the "Total" field. These figures are important for room allocation purposes during optimisation and room optimisation.



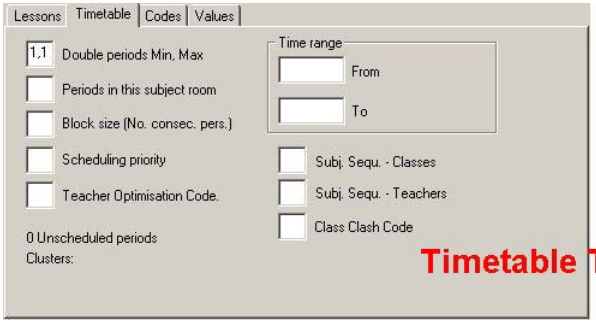

### Text

Use this field to enter a descriptive text for a lesson. The text is displayed in the timetable details window under "Special text" and can also be displayed in the actual timetable window (see example on the left).

### Line text/ Line text-2

The two fields allow you to enter text for the individual lines of a coupled lesson.

## The "Timetable" tab




### Double periods Min,Max

This function allows you to specify the permitted (or desired) number of double periods of a lesson. An empty field means that lessons are scheduled as single periods.

Assume that you want to schedule a lesson with 4 periods per week. Enter "1,1" in this field to specify a double period. Enter "1,2" to allow either a double period and 2 single periods or two double periods.

### Periods in this subject room

**Note**

When a lesson is marked to be taught in a designated subject room, the optimisation tool attempts to schedule all periods of this lesson in the designated subject room. This may be undesirable when there is a lack of suitable rooms or a problem with room allocation. If you want 2 out of 3 Physics lessons to take place in the Physics lab, enter the number "2". This field should normally be left empty.

### Block size (No. consec. pers.)

As mentioned above, lessons are normally scheduled as single periods. Several consecutive periods of the same lesson are referred to as a lesson block. This option allows you to enter and modify lesson blocks.

**Example**

- You want a lesson with 5 periods per week to be taught in a block of 4 periods and one single period. Enter the number "4" in the box.
- Enter "4,3,3" to assign two 3 period blocks and one 4 period block to a lesson with a total of 10 periods per week.

**Note**

Double periods have a special status in a period block and need to be entered in the separate "Double periods Min,Max" field.

### Scheduling priority

At the beginning of an optimisation run, gp-Untis starts by calculating the level of difficulty for all lessons. The more elements are involved and the more restricting the time requests entered for involved elements, the more difficult it is for the optimisation tool to place a lesson.

The gp-Untis placement algorithm starts by placing the most difficult lessons first. You can change the order of planning priorities by applying planning priority levels (permitted range: 1 - 9). Lessons with a low priority level are placed first when there are still many "good" slots available.

If you leave this field empty, the default priority level of 5 will be used. Lessons with priority levels 1 - 4 take precedence over other lessons, while lessons with levels 6 - 9 are scheduled later. This means that lessons with a planning priority of 9 are placed last and lessons with a priority of 1 placed first.

**Warning!**

Entering data in this field has a profound effect on the running processes of the optimisation tool. In most cases, the overall result will deteriorate. Do not use this field lightly and use it only when you have good reason to do so!

### Subj. Sequence - Classes / Teachers

Like the master data window, the lesson window contains a "Subject Sequence" field. You can enter 1 - 9 for a positive and A - E for a negative subject sequence. Please see the chapter "User tips" for further details.

### Class Clash Code (CCC)

This symbol allows the software to schedule two lessons at the same time even when the same class is involved in both lessons. Enter values 1 - 9 where a conflict is permissible between lessons with the same CCC, and A - H where a conflict is permissible between lessons with different non-numerical CCC. Please see the chapter "User tips" for further details.

### Unscheduled periods

This field displays how many lesson periods remain unscheduled on the timetable.

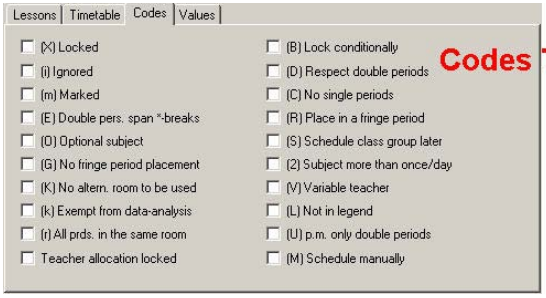
### Clusters

This field is only of relevance when using the module *Course Scheduling*.

## The "Codes" tab

### (X) Locked

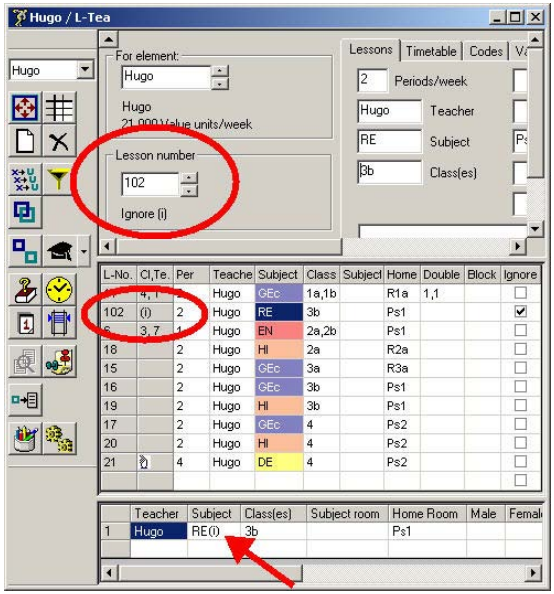
Lessons marked (X) are locked on the timetable. The periods of a locked lesson are not affected by subsequent optimisation runs.




### (I) Ignored

Lessons marked (i) are ignored on the timetable. The lessons are treated as if they did not exist and are not scheduled by the optimisation tool or displayed by the scheduling tools (scheduling dialogue, planning timetable or on the timetable). The values and weekly periods for the elements involved, however, count towards the total.

In lesson views, ignored lessons are marked with the letter (i) next to the lesson number. Indirectly ignored lessons, i.e. lessons not directly coded (i), but containing an element marked Ignore, are shown in the lesson details window with an (i) displayed after the ignored element. The only "Ignore" code not displayed in the details window is the (i) code caused by a lesson group.




Display of ignored lessons

### (m) Marked

Any lesson can be marked (m). This is useful for some functions such as printing when the function should be restricted to marked lessons only.

**(E) Double periods are allowed to span *-breaks**

Breaks marked with an asterisk (*) in the time grid must not be bridged by double periods. Use the code (E) to deactivate this restriction for specific lessons.

**(O) Optional subject**

The optimisation tool treats all lessons marked (O) as if a non compulsory subject was involved. For further details, please see the chapter "Fringe period and optional subjects" under "User tips" on p.296.

**(G) No fringe period placement**

Activate this code if a particular lesson should not be scheduled in a fringe period. For further details, please see the chapter "Fringe period and optional subjects" under "User tips" on p.296.

**(K) No altern. room to be used**

Lessons marked (K) must only be scheduled in the designated lesson room. The use of alternative rooms is not permitted.

**(k) Exempt from data-analysis**

The code (k) is used to exclude a lesson from the automated data analysis function.

Activate this function only when you have made sure that the lesson in question will not obstruct the optimisation tool.

**(r) All prds. in the same room**

**Warning!**

All lesson periods marked (r) take place in the same room. This code has a major influence on the room optimisation function since the (r) code is powerful enough to displace a class from its home room. Please read the chapter "Room logic" under "User tips" on p.278 for further details before attempting to use this function.

### Teacher allocation locked

The teacher assigned to teach a class can be locked separately for each coupling line to ensure that the placement cannot be changed by the automated teacher allocation function (only for use with the module *Lesson Planning and Value Calculation*). See also the chapter "Optimisation" under "Timetable optimisation" on p.130.

### (B) Lock conditionally

Lessons marked (B) are treated as locked lessons during the first part of the optimisation run (placement run). During the subsequent optimisation run (swap run), however, the temporary locking function is automatically deactivated (see also the chapter "Optimisation" on p.127).

### (D) Respect double periods

Activate this function for a lesson (or a subject) if you want the optimisation tool to adhere strictly to the number of permitted (desired) double periods. This also applies to lessons for which double periods are generally not permitted ("0,0" in the "Double periods Min,Max" field). The function is particularly useful when the optimisation errors "Double per. split up", "Unrequ. double pers." and "Subject twice a day" should be avoided at all cost.

**Warning!**

- Use this function sparingly (if in doubt, not at all) since it causes major restrictions for the optimisation tool – especially for subjects with many periods per week. When using this function, ensure that the relevant weighting parameter ("Avoid errors with double periods") is increased to "5" (if necessary).
- Please also note that to ensure the correct treatment of double periods, data must be entered in the "Double periods Min, Max" field.
- The code (D) excludes the use of code (2) and (C).

### (C) No single periods

Lessons marked (C) are preferentially scheduled as block lessons. Single periods will be avoided if at all possible.

Warning!

- This code is only useful for lessons with more than 6 periods per week.
- The codes (2), (C) and (D) are mutually exclusive.

**(R) Place in a fringe period**

Use this option to specify lessons that should be scheduled in fringe periods (see also free period subjects). The attribute ensures that lessons marked (R) are preferentially scheduled at the beginning or the end of a school day or half-day (in the time grid). For further details, please see the chapter "Fringe period and optional subjects" under "User tips" on p.296.

**(S) Schedule class group later**

Warning!

Use this function to change the planning priorities for lessons in class groups. The code instructs the optimisation tool to leave the scheduling of these lessons until after other classes of the same class group have been scheduled.

- Use this code only when you are familiar with working with class groups.

**(2) Subject more than once/day**

The gp-Untis optimisation algorithm assumes that a subject should only be scheduled once a day for any one class (except block lessons and double periods). This condition has a very high weighting. To allow the software to schedule a subject at any time, deactivate the condition using this function.

- The options (2), (C) and (D) are mutually exclusive.

**(V) Variable teacher**

To give the optimisation tool greater flexibility, lessons can be marked (V) to allow the software to replace teachers involved in these lessons with other suitable teachers. Please see the chapter "Optimisation" under "Timetable optimisation" on p.130 before using this function.

### (L) Not in legend

Lessons marked (L) are not included in the legend of the printed timetable.

### (U) p.m. only double periods

This code ensures that the automated optimisation function will only schedule double periods and no single periods in the afternoon.

This code is only useful when:

**Note**

- double periods are permitted and
- the subject is marked as a subject that can take place in the afternoon.

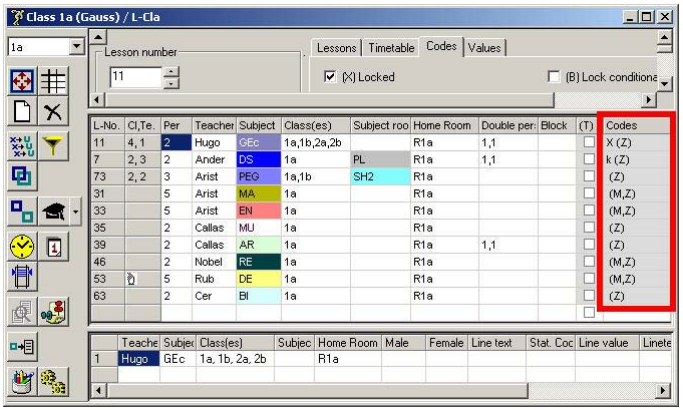
### (M) Schedule manually

Lessons marked (M) are ignored by the optimisation tool. These lessons need to be scheduled manually (e.g. with the help of the scheduling dialogue).

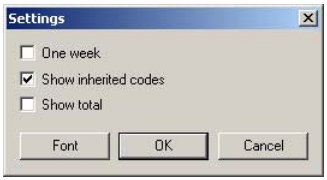
**Settings**

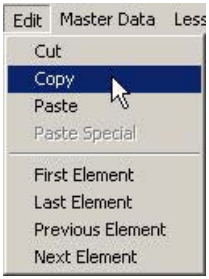
### Show codes

This field can only be activated in the grid view via the button <Grid Adjustment>. It offers an excellent overview of the relevant timetable settings of a lesson. The "code" column clearly and comprehensively displays all the codes placed for a lesson. The code Z denotes lessons with an active time request.




Tick the relevant box under <Settings> if you want inherited codes, i.e. codes entered for a master data element of these lessons, to be displayed in brackets.






## The clipboard

You can copy selected (highlighted) lessons to the clipboard (e.g. via Ctrl - C).

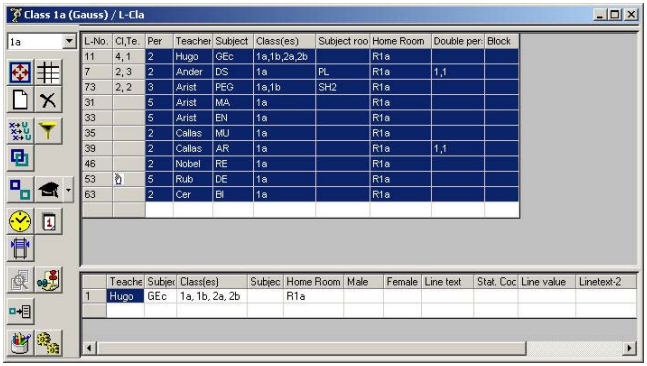
### Programme-internal use

The clipboard function allows you to copy the lessons of one class to another within the same programme.

**Example**

You have finalized the subject distribution when you realize that, due to the large number of new students, your school will need a third first year class. You find that you need to create a class 1c in addition to classes 1a and 1b.
Proceed as follows:

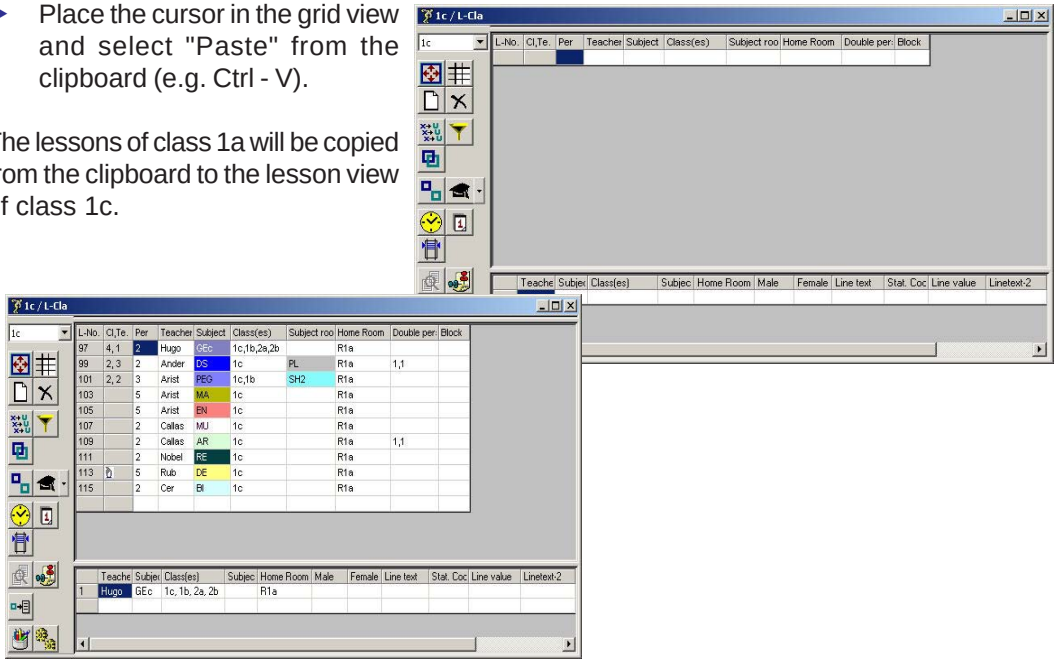
- Start gp-Untis and load the file *demo.gpn*.
- Create a new class 1c.
- Open the lesson view for classes ("Lessons | Classes") and switch to the element 1a.
- In the grid view, select (highlight) all the lessons for 1a (see figure on the left).
- Copy the lessons to the clipboard (e.g. via Ctrl - C).
- Switch to the active element 1c.




There are no lessons scheduled yet for the newly created class 1c.

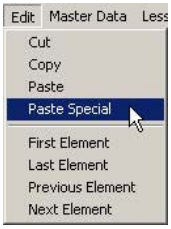
- Place the cursor in the grid view and select "Paste" from the clipboard (e.g. Ctrl - V).

The lessons of class 1a will be copied from the clipboard to the lesson view of class 1c.




## Paste Special

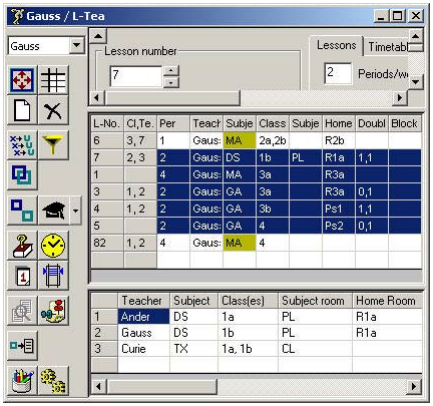
In addition to the normal Paste function, you have access to the function "Paste Special" in the "Edit" menu. This function allows you to paste not only the lessons, but the timetable of the copied lessons, i.e. the class timetable will also be copied.



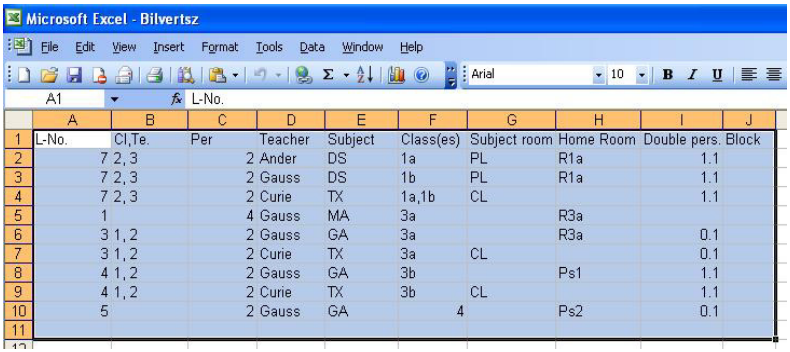

## Data export to external programmes

The clipboard can also be used to export data to external programmes, e.g. spread sheets or word processing programmes.

- Start gp-Untis and load the file *demo.gpn*.
- Open the lesson view for teachers ("Lessons | Teachers") and select Gauss as the active element.



- Select (highlight) lesson numbers 7 to 5 in the grid view.
- Copy the lessons to the clipboard (e.g. via Ctrl - C).
- Switch to your spread sheet programme and paste the data (Ctrl - V).




| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Home Room | Double pers. | Block |
| 2 | 7 | 2, 3 | 2 | Ander | DS | 1a | PL | R1a | 1.1 | |
| 3 | 7 | 2, 3 | 2 | Gauss | DS | 1b | PL | R1a | 1.1 | |
| 4 | 7 | 2, 3 | 2 | Curie | TX | 1a,1b | CL | | 1.1 | |
| 5 | 1 | | 4 | Gauss | MA | 3a | | R3a | | |
| 6 | 3 | 1, 2 | 2 | Gauss | GA | 3a | | R3a | 0.1 | |
| 7 | 3 | 1, 2 | 2 | Curie | TX | 3a | CL | | 0.1 | |
| 8 | 4 | 1, 2 | 2 | Gauss | GA | 3b | | Ps1 | 1.1 | |
| 9 | 4 | 1, 2 | 2 | Curie | TX | 3b | CL | | 1.1 | |
| 10 | 5 | | 2 | Gauss | GA | 4 | | Ps2 | 0.1 | |
| 11 | | | | | | | | | | |

The following data will be copied to the spread sheet programme:

- The selected lessons.
- The fields shown in the view (in the order in which they appear in the view).
- One row per coupled teacher.

## Lesson sequences

Lesson sequences allow you to influence the scheduling of lessons on the timetable. There are three different types of lesson sequences:

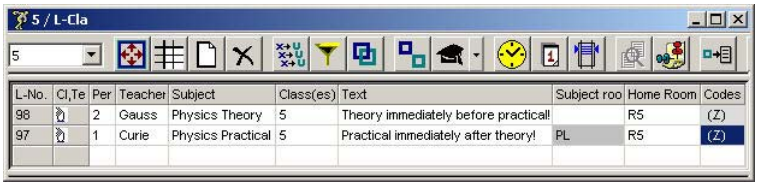
1. Fixed (subject) sequences
2. Sequence in a week
3. Simultaneous lessons

## Fixed (subject) sequence

Use the fixed subject sequence to specify the periods that must be scheduled in sequence.

**Example**

You want the lesson Physics Theory for class 5 to take place immediately before the practical Physics lesson in the lab.

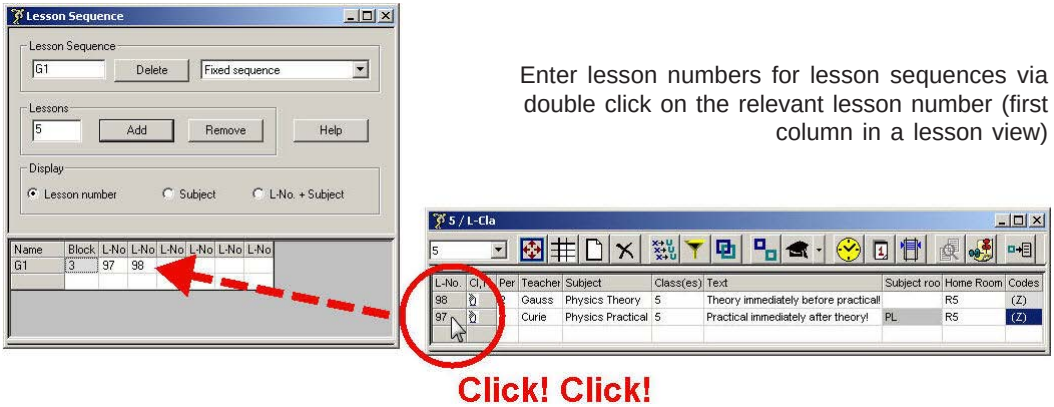



Enter both lessons as a fixed subject sequence (see figure below).

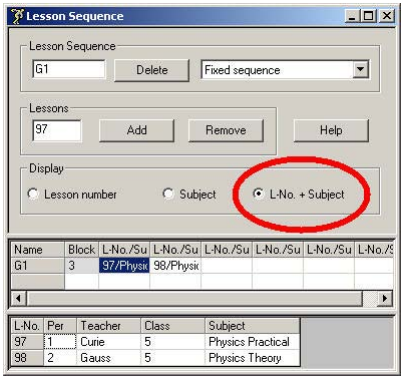
The gp-Untis optimisation tool will schedule lesson 98 immediately after lesson 97.

**Tip**

You do not have to use the keyboard to enter the lesson numbers involved in a fixed subject sequence. Alternatively (when you have both the subject sequence window and a lesson window open on the screen), double click on the column of the relevant lesson number in the lesson view to include the lesson in the active lesson sequence.




Enter lesson numbers for lesson sequences via double click on the relevant lesson number (first column in a lesson view)




Instead of lesson numbers, the software can also display subjects or subject+lesson numbers (in the middle part of the window).

**Note**

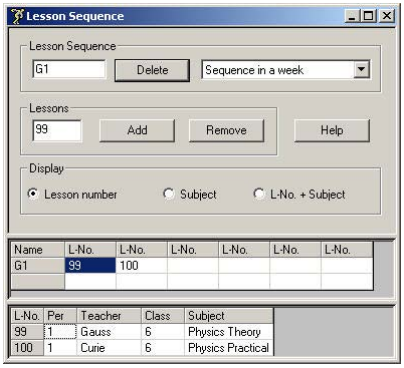
When changing the width of the first column of the middle window, the other columns are adjusted automatically.

## Sequence in a week

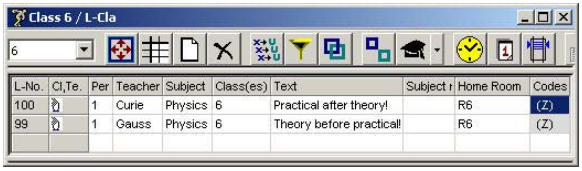
The week sequence allows you to specify the order of class lessons during the week. This function is designed for use with lessons with one or two periods per week.

**Example**

You want the software to schedule one period of practical Physics in the lab for class 6 sometime after all the Physics Theory lessons have taken place.




Enter the sequence in a week as shown in the example of the left to instruct gp-Untis to schedule lesson 100 after lesson 99. Lesson 99 could now be scheduled for Monday-4 and lesson 100 for Thursday-5.



## Simultaneous lessons

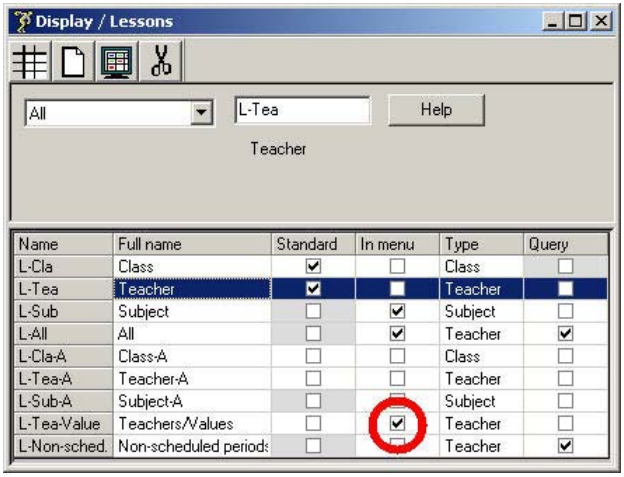
In certain circumstances, for instance after a data transfer from gp-Curs, it may be desirable, but not essential to schedule different lessons at the same time. This can be achieved using the "Simultaneous lessons" function.

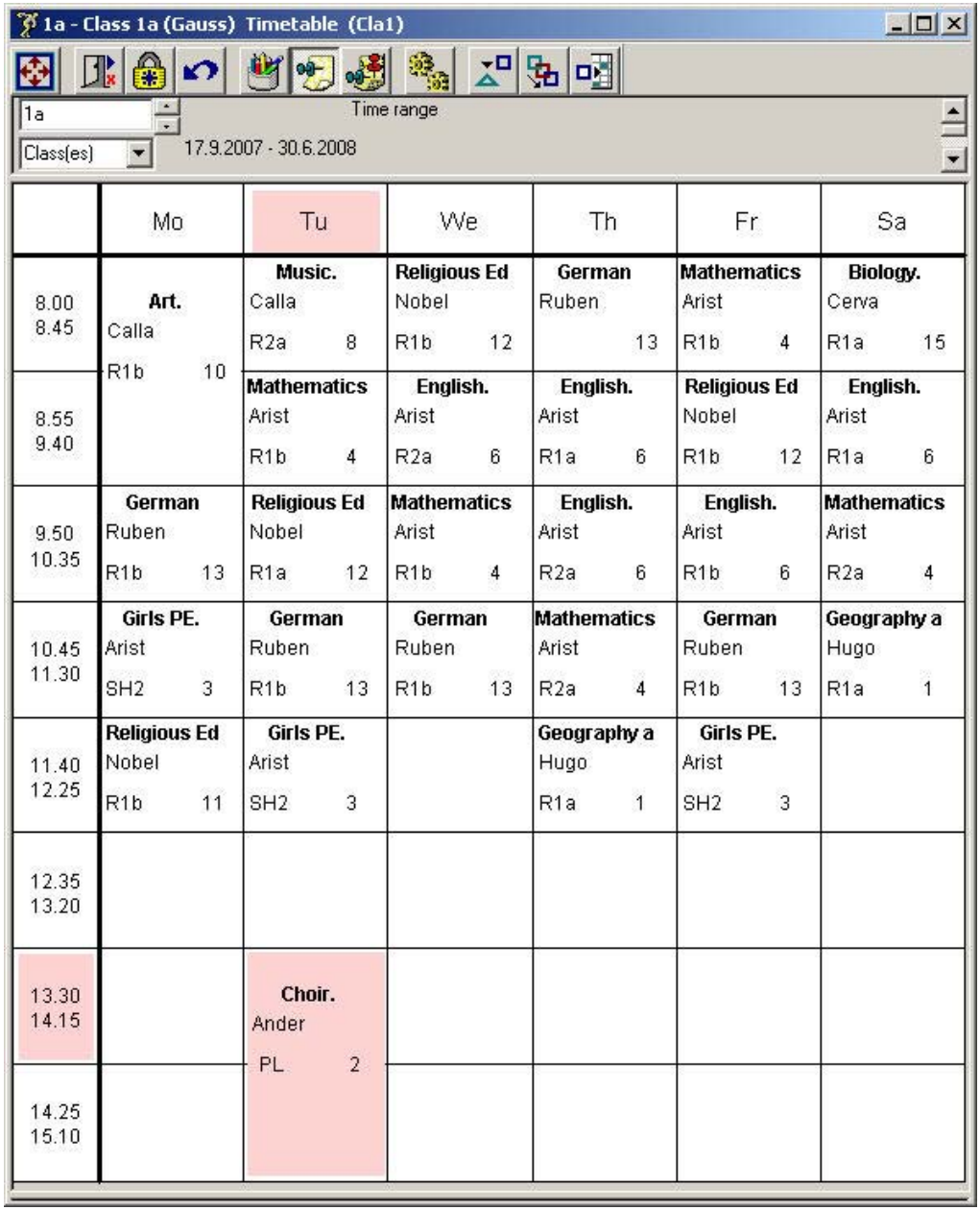
The difference between simultaneous lessons and coupled lessons is that the optimisation tool is permitted to split simultaneous lessons. Coupled lessons, by contrast, can never be split.

## Display - Lessons

The "Display - Lessons" window contains a list of all the different lesson views. Here you can open views, create new views and delete existing views (compare master data views). Please note that you can include your personal lesson views in the menu by ticking the option "In menu".






| | Mo | Tu | We | Th | Fr | Sa |
|---|---|---|---|---|---|---|
| 8.00<br>8.45 | **Art.**<br>Calla<br>R1b 10 | **Music.**<br>Calla<br>R2a 8 | **Religious Ed**<br>Nobel<br>R1b 12 | **German**<br>Ruben<br>13 | **Mathematics**<br>Arist<br>R1b 4 | **Biology.**<br>Cerva<br>R1a 15 |
| 8.55<br>9.40 | | **Mathematics**<br>Arist<br>R1b 4 | **English.**<br>Arist<br>R2a 6 | **English.**<br>Arist<br>R1a 6 | **Religious Ed**<br>Nobel<br>R1b 12 | **English.**<br>Arist<br>R1a 6 |
| 9.50<br>10.35 | **German**<br>Ruben<br>R1b 13 | **Religious Ed**<br>Nobel<br>R1a 12 | **Mathematics**<br>Arist<br>R1b 4 | **English.**<br>Arist<br>R2a 6 | **English.**<br>Arist<br>R1b 6 | **Mathematics**<br>Arist<br>R2a 4 |
| 10.45<br>11.30 | **Girls PE.**<br>Arist<br>SH2 3 | **German**<br>Ruben<br>R1b 13 | **German**<br>Ruben<br>R1b 13 | **Mathematics**<br>Arist<br>R2a 4 | **German**<br>Ruben<br>R1b 13 | **Geography a**<br>Hugo<br>R1a 1 |
| 11.40<br>12.25 | **Religious Ed**<br>Nobel<br>R1b 11 | **Girls PE.**<br>Arist<br>SH2 3 | | **Geography a**<br>Hugo<br>R1a 1 | **Girls PE.**<br>Arist<br>SH2 3 | |
| 12.35<br>13.20 | | | | | | |
| 13.30<br>14.15 | | **Choir.**<br>Ander<br>PL 2 | | | | |
| 14.25<br>15.10 | | | | | | |

# Timetable optimisation




The following chapter describes the timetable optimisation function and the diagnosis tools used before and after an optimisation run.

The optimisation tool of the gp-Untis timetabling software manages the entire automated process of constructing a timetable. It consists of two main elements – the *placement run* and the *swap run*.

The programme starts with an empty time grid and proceeds to fill the grid with periods. Since this alone would not necessarily produce the best results, the constructed timetable then undergoes a series of specific period swaps to improve the final outcome. In the end, the weighting settings you have specified will determine the actual quality of the timetable.

An apt comparison is the board game Nine Men's Morris where two players place individual pieces on an empty board before attempting to improve their positions by strategically moving the pieces across the board.

Of course, the placements and swaps initiated by the programme are not done at random. Each violation of one of the specifications you have entered (e.g. the maximum number of periods per day) incurs a penalty point. With the help of the weighting settings, the software proceeds to re-evaluate the penalty points until it arrives at a value for the entire timetable. This value gives you an indication of how good the timetable really is. The lower the value, the higher the level of compliance with the given settings and the better the overall quality of the completed timetable.

# Weighting

The weighting function forms the basis of the automated timetable optimisation tool. gp-Untis offers 6 levels of importance ranging from "Unimportant" (0) to "Extremely important" (5) which allow you to specify the level of priority given to the individual settings.

**Note**

Some weighting points only become effective after specific data has been entered in the master data or lesson window (see the chapter "Data input"). Other weightings, by contrast, are data-independent and affect every optimisation run.

**Example**

The function "Respect the maximum and minimum number of periods per day for teachers", for instance, is a *dependent* weighting point since it depends on data entered under "Periods day Min, Max" on the "Timetable" tab under "Master Data | Teachers" (e.g. "2, 4"). The weighting determines the level of importance of these settings (i.e. the degree of compliance with the settings). Leaving the field empty means that the weighting has no effect on the optimisation process.

*Independent* weighting points, by contrast, involve general settings such as "Avoid non-teaching periods (NTPs)" or "Avoid having just one period in a half-day for teachers" since window periods and single periods do not require additional specifications to be entered under master data or lessons.

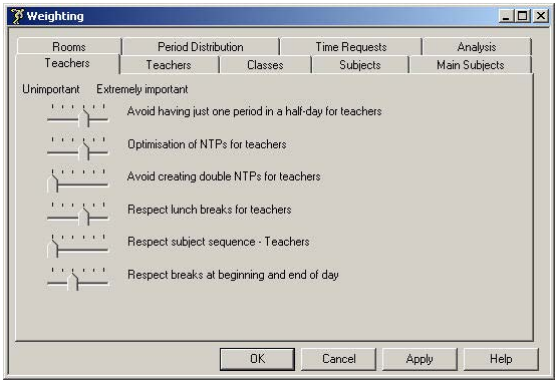



The weighting settings can be accessed via the menu item "Scheduling | Weighting".

The weighting dialogue contains the different weighting parameters sorted by topic and organized on a number of different tabs. Increase or decrease individual weighting settings by using the slider provided. From left to right, the weighting sliders offer 6 different levels of importance:

- Position 0 - unimportant
- Position 1 - not very important
- Position 2 - fairly important

- Position 3 - important
- Position 4 - very important
- Position 5 - extremely important

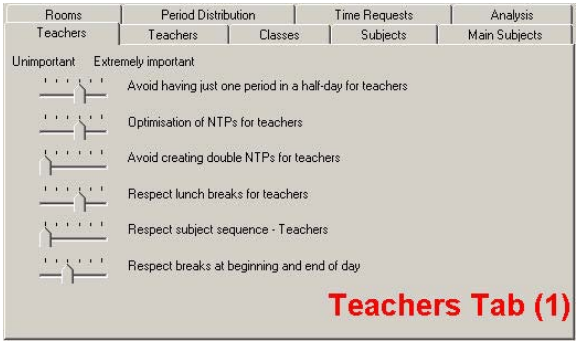



The following chapter briefly describes the individual parameters with reference to the master data and lesson data settings relevant for dependent weighting points.

## The weighting parameters

The weighting parameters are topic-based and can be modified on the appropriate tab.

### The "Teachers (1)" tab




#### Avoid having just one period in a half-day for teachers

When a teacher has lessons on a half-day, a high weighting ensures that the teacher will teach more than a single period.

#### Optimisation of NTPs for teachers

Under "Master Data | Teachers", you have entered values for maximum and minimum numbers of NTP's (Non Teaching Periods). Use this slide to control the level of compliance with the specified settings.

#### Avoid creating double NTPs for teachers

In addition to controlling single NTPs, you can give penalty points for each double NTP scheduled by the software during optimisation.

### Respect lunch break for teachers

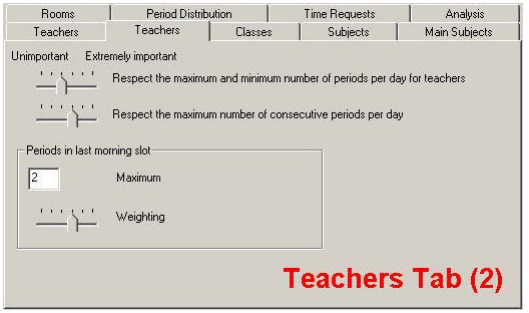
- Applies to the settings entered for minimum/maximum length of lunch break for teachers under "Master Data | Teachers".

### Respect subject sequence - teachers

- Controls the level of importance of the subject sequence codes entered under "Lesson | Teachers" or "Master Data | Subjects". For further details, please see the chapter "Subject sequences" on p. 297.

### Respect breaks at beginning and end of day

- Controls the level of importance of breaks between days entered on the "Timetable" tab under "Master Data | Teachers". For further details on breaks between days, please see the chapter "Master data properties" on p. 64.




## The "Teachers (2)" tab

### Respect the maximum and minimum number of periods per day for teachers

- Controls the level of compliance with the values entered under "Master Data | Teachers" for maximum / minimum number of periods per day for teachers.

### Respect the maximum number of consecutive periods per day

- Controls the level of compliance with the values entered under "Master Data | Teachers" for maximum number of periods per day in sequence.

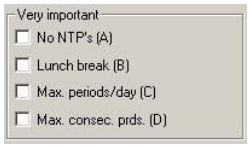
### Input block "Periods in last morning slot"

*Maximum*

Teachers scheduled to have lessons on the last period of the morning are often at a disadvantage. You can therefore specify the maximum number of last morning periods each teacher should teach.

*Weighting*

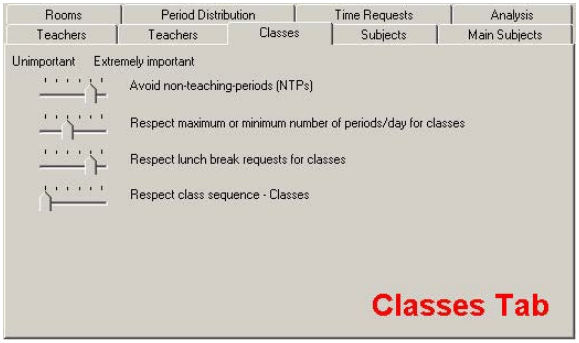
Indicates the level of compliance to this rule.




**Master Data | Teachers**

On the "Timetable" tab under "Master Data | Teachers", the weighting for NTPs, lunch break, maximum number of periods per day and maximum periods in sequence for individual teachers can be increased further (to "Very important").

## The "Classes" tab




### Avoid non-teaching periods (NTPs)

- Controls the avoidance of NTPs for classes.

### Respect maximum or minimum number of periods/day for classes

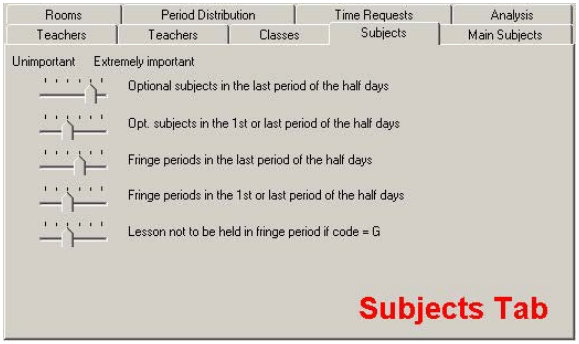
- Controls the level of compliance with the values entered under "Master Data | Classes".

### Respect lunch break requests for classes

- Controls the level of compliance with the values entered under "Master Data | Classes" for minimum / maximum length of lunch break.

### Respect class sequence - Classes

- Controls the level of compliance with the subject sequence codes specified under "Lesson | Classes" or "Master Data | Subjects".




## The "Subjects" tab

Use the following weighting settings to control the level of compliance with the specifications entered for fringe periods and optional subjects. These subjects are defined on the "Subjects" tab under "Master Data | Subjects" (code "(F) Fringe period" or "(O) Optional subject").

Fringe periods and optional subjects are usually lessons not attended by all the students of a class. To avoid NTPs for the rest of the students, these subjects should preferentially be scheduled at the beginning or the end of a half-day.

Code (G) "Not a fringe period" has the opposite effect. A subject marked (G) should preferentially be scheduled in the middle of a half-day.

**Optional subjects only in the last period of the half days**

- Controls the scheduling of subjects marked "Optional subject" in the last periods of a half-day.

**Opt. subjects in the 1st or last period of the half days**

- Controls the scheduling of subjects marked "Optional subject" in the first or last periods of a half-day.

**Fringe periods in the last period of the half days**

- Controls the scheduling of subjects marked "Fringe period" in the last periods of a half-day.

**Fringe periods in the 1st or last period of the half days**

- Controls the scheduling of subjects marked "Fringe period" in the first or last periods of a half-day.

**Lesson not to be held in fringe period is code = G**

- Controls the scheduling of subjects marked (G) in the middle periods of a half-day.

The only differences between optional subjects and fringe period subjects are the different weighting settings specified by the timetabler.

**Example**

You have two subjects – Choir and Clarinet – both of which are attended by some of the students of the class. The subject Choir can take place either at the beginning or the end of a half-day, but you want the subject Clarinet to take place exclusively at the end of the day.

Meet both requirements by entering the code (O) for Choir and the code (F) for Clarinet and set the weightings accordingly.

**Time requests**

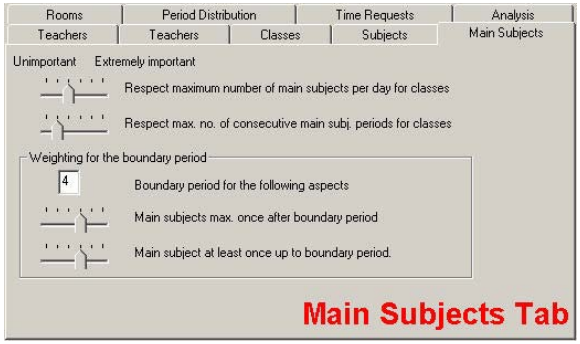
If you want the subject Choir to be scheduled exclusively at the beginning of a half-day, simply block the last periods of the half-day by entering the time request -3 (under "Master Data | Subjects").

**Note**

You can also control the scheduling of fringe period subjects and optional subjects exclusively via the time request function. However, the optimisation tool will profit from a higher degree of flexibility when working with weighting settings rather than time requests.

## The "Main Subjects" tab

Main subjects can be defined under "Master Data | Subjects".




**Respect maximum number of main subjects per day for classes**

- Controls the level of compliance with the specification "Maximum number of main subjects per day" entered on the "Timetable" tab or in the grid view under "Master Data | Classes".

**Respect max. no. of consecutive main subject periods for classes**

On the "Timetable" tab or in the grid view under "Master Data | Classes", you can specify the number of main subjects that may be scheduled in sequence for a class. This weighting controls the level of importance of the settings.

**Input block "Boundary period for the following aspects"**

*Boundary period for the following aspects*

Use this input field to specify a boundary period.

*Main subjects max. once after boundary period*

Controls the level of importance for the above specification (per week).

*Main subject at least once up to boundary period*

Controls the level of importance for the above specification (including the boundary period) per week.

**Note**

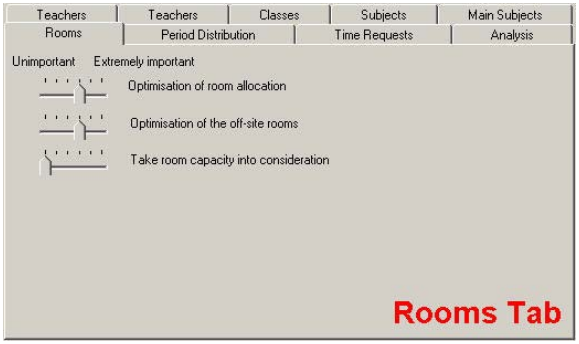
The difference between the two weighting settings depends on what happens after the boundary period. The task of the first weighting is clear – a main subject must not be scheduled more than once per week after the boundary period. The meaning of the second weighting, by contrast, is not as obvious. Choosing a high priority means that the main subject can be scheduled after a boundary period *as often as necessary* as long as it is scheduled *at least once before* the boundary period.

**Example**

You have defined period 5 as your boundary period. Now you want to schedule 4 periods of English (a main subject). If the software has already scheduled one period of English for Monday, period 6, a high weighting for "Main subjects max. once after boundary period" ensures that the other three periods are scheduled before or in period 5.

A high weighting for "Main subject at least once up to boundary period", by contrast, would ensure that English could be scheduled after period 5 on two other school days as long as it is scheduled at least once before or in period 5.

## The "Rooms" tab




### Optimisation of room allocation

Use the "Room weight" field under "Master Data | Rooms" to assign a value between 0 and 4 to each room in the school. 0 indicates that the room is non-essential for the lesson allocated to it, i.e. it is unimportant if a lesson takes place in this room or in an alternative room (for instance because the lesson requires no special fixed teaching aids). 4 indicates a high priority, i.e. a lesson should be scheduled in this room (or its designated alternative room), if at all possible.

A Chemistry lesson where a number of experiments will be performed should only take place in the Chemistry lab. A PE lesson only makes sense when the sports hall is available.

**Example**

You have entered both a home room and a subject room for a particular lesson. The optimisation tool will always allocate the subject room since the allocation of home rooms is the sole responsibility of the subsequent room optimisation function. Please see the chapter "Room logic" on p.278 for further details.

**Note**

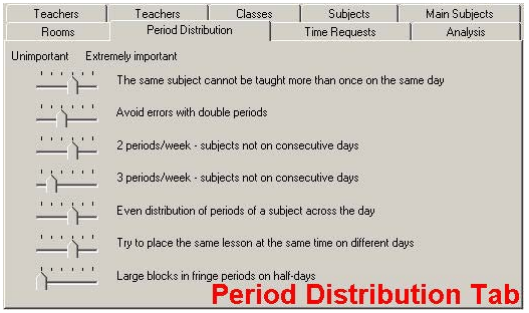
If the weighting slider is set to 5 (extremely important) or 4 (very important) and if, in addition, the room weighting of the subject room is set to 4, the lesson will *not* be scheduled unless a suitable subject room can be found.

### Optimisation of the off-site rooms

- Controls the level of compliance with the specified walking times required to reach off-site buildings (external sites). Please see the chapter "Off-site rooms" on p.290 for further details.

### Take room capacity into consideration

As a rule, the optimisation tool and the room optimisation function attempt to allocate a room with a room capacity appropriate for the number of students in the class. If this presents a problem, the programme searches for a room that is slightly larger than required. In extreme cases, the software may allocate a room that is slightly smaller than required.




## The "Period Distribution" tab

### The same subject cannot be taught more than once on the same day

Specifies that a subject must not be scheduled more than once a day for a class (even if the subject is involved in a number of different coupled lessons).

### Avoid errors with double periods

gp-Untis identifies 2 types of double period errors: the splitting of desired double periods and the "accidental" emergence of undesirable double periods when the same subject is scheduled for consecutive periods. Of the 2 errors, the optimisation tool assigns a higher priority to the preservation of desired double periods.

This weighting is connected with codes "(2) More than once a day" and "(D) Respect double periods". You can find these settings in the master data and the lesson window. The two codes are mutually exclusive.

Code (2) causes the weighting for "Avoid errors with double periods" to be set to 0 (unimportant), while code (D) increases the importance of the weighting. This increase in importance can result in a situation where a lesson will not be scheduled because the software cannot comply with the double period condition.

**Warning**

When you set the weighting for "Avoid errors double periods" to 5 (extremely important), the optimisation tool rates the importance of the double period condition very high right from the very beginning of the optimisation run and even increases the importance during the run so that at the end of the optimisation process, all lessons are treated automatically as if the lessons had been coded "(D) Respect double periods". For this reason, activate code (D) **only in exceptional cases or not at all**. Excessive use leads to a deterioration of the optimisation results.

**2 periods/week - subjects not on consecutive days**

This weighting applies to lessons with 2 periods per week (no double period) and is designed to ensure that the two periods are evenly spread throughout the week. A high weighting prevents the software from scheduling the two lessons on consecutive days or from scheduling one lesson on the last week day and the other on the first week day.

**3 periods/week - subjects not on consecutive days**

This weighting applies in the same way as the previous one, but for 3 periods per week.

**Even distribution of periods of a subject across the day**

A high weighting ensures that a subject scheduled for Monday, period 3, is scheduled for a different period on subsequent days of the week, i.e. not period 3. The following weighting point has the opposite effect.

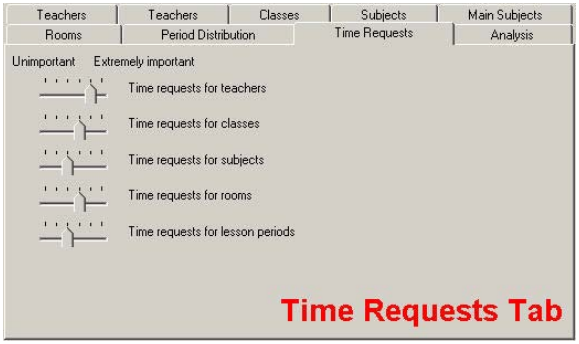
**Try to place the same lesson at the same time on different days**

A high weighting ensures that a subject scheduled for Monday, period 3, is also scheduled for period 3 on other days of the week. The previous weighting point has the opposite effect.

**Large blocks in fringe periods on half-days**

For a variety of reasons, it is often desirable to schedule block lessons at the beginning or end of a half-day. A half-day consisting of 6 periods can therefore accommodate 2 blocks of 3 periods each. Since block lessons are often slightly shorter than the sum

of the single periods (for instance, because there are no breaks between periods), students will be able to leave school early or start school later than the normal start time.




## The "Time Requests" tab

Time requests can be entered via the master data or the lesson window by clicking on the button <Time Requests>. For further details, please see the chapter " Time requests" on p.260.

**Time requests**

### Time requests for teachers

- Controls the compliance with time requests entered under "Master Data | Teachers".

### Time requests for classes

- Controls the compliance with time requests entered under "Master Data | Classes".

### Time requests for subjects

- Controls the compliance with time requests entered under "Master Data | Subjects".

### Time requests for rooms

- Controls the compliance with time requests entered under "Master Data | Rooms".

### Time requests for lesson periods

- Controls the compliance with time requests entered in the lesson window.

## General notes

If you have not worked with the weighting parameters before, we would suggest you proceed as follows:

First, familiarize yourself with all the weighting parameters and their functions.

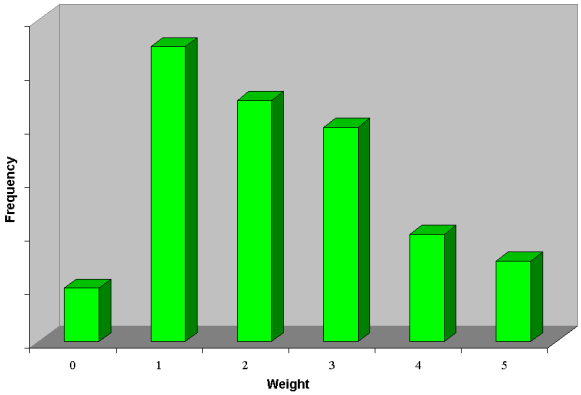
Then, move the sliders for all the attributes that **do not apply to your school under any circumstances** to the very left (position 0 = unimportant), for instance, for "Optimisation of the off-site rooms" if your school has no off-site rooms.

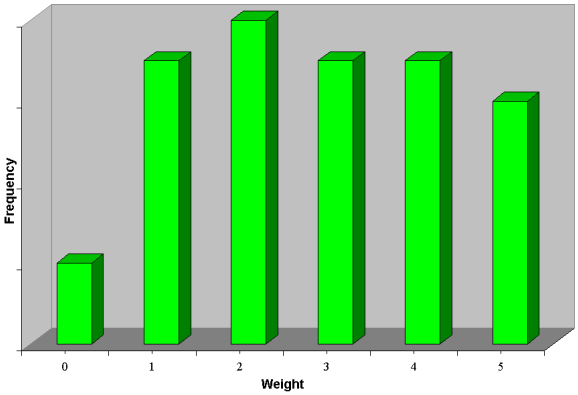
**Caution:** If in doubt about the relative importance of an attribute, set the slider to position 1 (not very important) instead of 0.

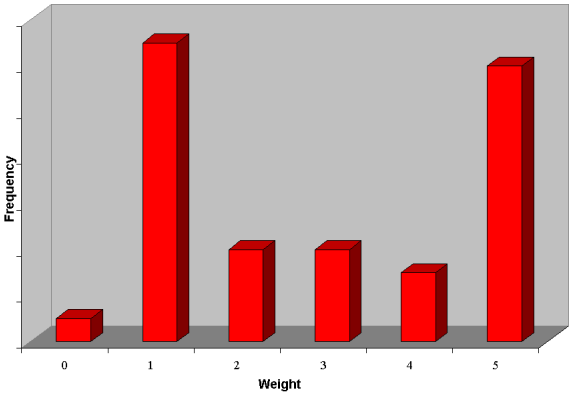
Next, adjust the remaining sliders in order of increasing importance from "not very important" to "extremely important".

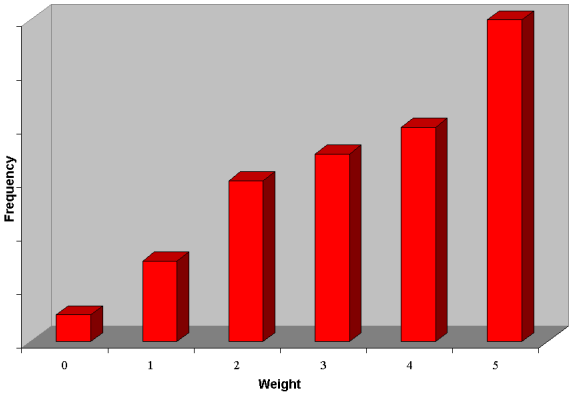
Watch the frequency with which you assign the different levels of importance. As a general rule, it is desirable to assign the weighting settings between 1 (not very important) and 5 (extremely important) in roughly equal numbers, or in decreasing frequency as the level of importance increases. Please see the example shown in the two graphs (the x axis shows the 6 weighting levels, the y axis shows the relative frequency of each weighting).

**Even weighting distributions**






You should never end up with a distribution where a disproportionately large number of weightings are set to 0 or 1 (unimportant/not very important) or to 5 (extremely important). Another undesirable situation is a frequency that increases with increasing weighting importance. See the two graphs on the left for comparison.

These situations are undesirable because they prevent the optimisation tool from working as efficiently as possible.

The software will still construct a timetable even if it is burdened with a disproportionately large number of settings on 0 or 1 (unimportant/not very important). However, since gp-Untis regards a violation of these settings as a relatively minor offence, the resulting timetable may not conform fully to your requirements.

**Bad weighting distributions**

If, by contrast, you have selected too many settings of "extremely important", the optimisation tool will be restricted to the extent that it can only schedule a fraction of the periods. For example, if you select the setting "extremely important" for the time requests of both teachers and classes, and for "Even distribution of periods of a subject across the day" (on the "Period Distribution" tab) and for "Optimisation of room allocation" (on the "Rooms" tab), you will soon reach a point where it becomes impossible for the software to meet all the requirements.

**Note**

**The construction of a good timetable is not a matter of frequently selecting the highest weighting, but of accurately representing the different conditions at your school.**

# Analysis of input data

Before starting the actual optimisation run, it is useful to check your data for errors and possible problems.

## CCC-Analysis

In order to obtain a good timetable, it is important to locate possible bottlenecks that might cause an obstruction for the scheduling tool, and to eliminate these **before the optimisation**.

Such bottlenecks occur in the form of Critical-Conflict-Chains (CCC). These are defined as groups of lessons that cannot be scheduled at the same time due to a conflict between classes and/or coupled teachers.

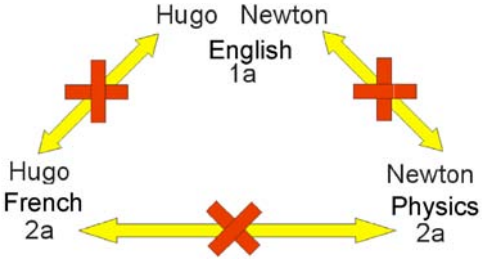
The CCC analysis locates the longest chains in your lesson input data and identifies the coupled teacher at the heart of the obstruction. Replacing this teacher will often result in a shortening of the chain, permitting the scheduling of all periods.

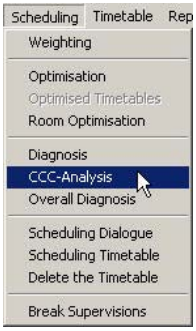
**Example**

If teacher Hugo is assigned to teach English (lesson 1) to class 1a and French (lesson 2) to class 2a, these two lessons cannot be scheduled at the same time. If lesson 1 (English, 1a) involves a coupled teacher (e.g. Newton) who is also assigned to teach Physics to class 2a, the number of lessons in this chain increases to three.

This means that whenever teacher Hugo teaches English to class 1a, two further lessons are automatically blocked (see diagram on the following page). Furthermore, Newton, who teaches Physics to class 2a, would also block the other two lessons since Hugo could not teach French to the same class at the same time, and Newton could not teach English to class 1a at the same time.

## Mutual obstruction of coupled teachers




The total number of periods per week involved in a chain is a measure of how difficult it is for the software to schedule the lessons in the chain. It is easy to see, for instance, that a large number of different teacher teams will mean a rapid increase in the total number of periods in the chain. If this number is greater than the number of periods available in the time grid, it is mathematically impossible to schedule all the lessons in this chain.

The task of the CCC analysis is to locate the longest conflict chains. Start the analysis by accessing the menu item "Scheduling | CCC-Analysis". The CCC window appears and the CCC analysis starts automatically. The analysis can take up to several minutes, depending on the size of your school.




During the analysis, you will see the number of the lesson currently being analyzed, i.e. scanned for its dependency on other lessons, in the upper part of the window (on the right hand side of the word "Lesson"). The two numbers in brackets denote the number of couplings the software has finished analyzing and the total number of couplings to be analyzed, respectively.




In addition, the information field "Investigated variations" displays the number of combinations the software has finished analyzing.

**Cancel**

You can cancel the data analysis at any time by clicking on <Cancel>.

**Start analysis**

Start a new CCC analysis by clicking on <Start analysis>.

**Example**

The following example shows how to use the CCC analysis function:

❶ Open the file *demo2.gpn* and start the CCC analysis via the menu item "Scheduling".

When the analysis is finished, the CCC window appears as shown in the figure below (there may be slight variations, depending on which version of the gp-Untis timetabling software you are using).

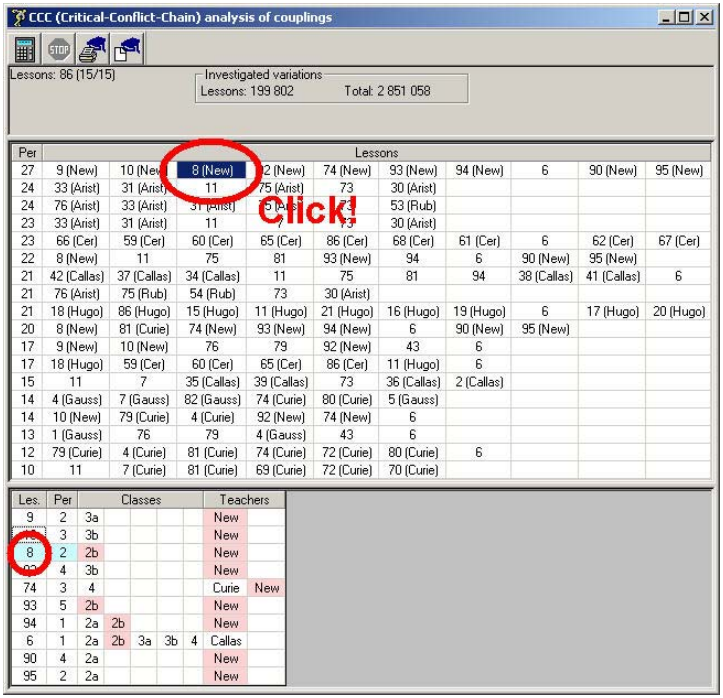
## The CCC window

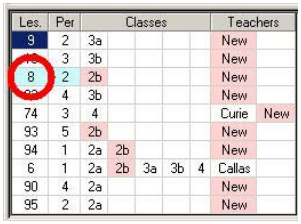
As you can see in the upper part of the window, there are 86 lessons and 15 couplings, resulting in over 2.8 million combinations that need to be analyzed.

### The middle part of the window

The middle part of the window shows a table of all CCCs listed in rows. The first column contains the total number of periods per week involved in each chain. The figures on the right are the lesson numbers of the lessons involved in the chains. The table also displays the abbreviated names of teachers in brackets next to some of the elements. The purpose of this function is described in a later chapter.

❷ Click on "8 (New)" in the first row of the middle part of the window (see figure).





| Les. | Per | Classes | | | | | Teachers | |
|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 3a | | | | | New | |
| [illegible] | 3 | 3b | | | | | New | |
| 8 | 2 | 2b | | | | | New | |
| [illegible] | 4 | 3b | | | | | New | |
| 74 | 3 | 4 | | | | | Curie | New |
| 93 | 5 | 2b | | | | | New | |
| 94 | 1 | 2a | 2b | | | | New | |
| 6 | 1 | 2a | 2b | 3a | 3b | 4 | Callas | |
| 90 | 4 | 2a | | | | | New | |
| 95 | 2 | 2a | | | | | New | |

### The CCC details window

The bottom part of the window - the details window – displays the details of the lesson selected in the middle part of the window. The example shows that the cells for lesson numbers and the number of periods per week are now shaded light blue. Several other cells are now shaded red.

The details window now displays the following information: the elements involved in lesson 8 with a total of 2 periods per week are the class 2b and the teacher Newton (abbreviated name "New").

Lesson 6 with one period per week, by contrast, involves several classes (2a, 2b, 3a, 3b and 4) and teacher Callas.

Some lessons such as lesson 74 (3 periods per week) may only involve one class (here class 4), but several teachers (Curie and Newton).

The cells shaded red highlight the reason why the displayed lesson cannot be scheduled at the same time as the lesson selected in the middle part of the window. Lesson 6, for instance, cannot be scheduled at the same time as lesson 8 since both lessons involve the class 2b. Lesson 10, by contrast, involves a different class, but the same teacher (Newton), and therefore cannot be scheduled at the same time as lesson 8 either.

### Shortening CCCs

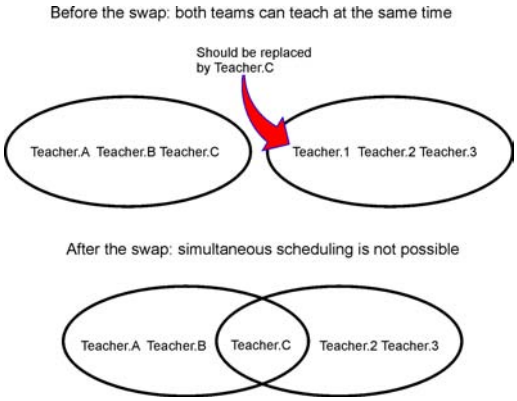
The longest chain – the first row in the middle part of the window – contains 27 periods that cannot be scheduled at the same time since this would lead to conflicts, as described above. If you consider that there may be time requests defined for each teacher, class and lesson, that each lesson may have additional conditions imposed on it (e.g. main subjects should not be scheduled too late in the day), that rooms are not always available, and that all this applies equally to the elements of all the other chains (the second longest still has a total number of 24 involved lessons), it is easy to see how a large number of chains with many periods can be the cause of a serious timetabling bottleneck.

**Note**

You now have the option of shortening the chain by assigning a different teacher to individual lessons.

Please note that swapping teachers may not necessarily result in a shortening of the chain. In the worst case scenario, it may even result in a lengthening of the chain.

A lengthening of the chain can occur when a re-assigned teacher is a member of a different teacher team that is not yet part of the chain.




When two (or more) teacher teams end up sharing a teacher after a swap, the increased number of teacher teams means there is a high probability that the teachers will block each other.

### List of teacher teams

Display or print the list of teacher teams (by clicking on the corresponding buttons in the CCC analysis window) to have a handy reference of the composition of the teacher teams at your school.

**Print**

**Print Preview**

### Critical element

The teacher whose swap would cause the greatest shortening of the chain is referred to as the *critical element*. The CCC analysis displays the abbreviated name of that teacher in the middle part of the window in brackets beside the lesson number.

When no critical element is displayed, the teachers for this lesson should not be swapped. See the given example where teacher Callas is assigned to teach lesson 6. Since four different classes are involved in this lesson, it is highly unlikely that a teacher swap would result in a shortening of the chain.

| Per | Lessons | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 9 (New) | 10 (New) | 8 (New) | 92 (New) | 74 (New) | 93 (New) | 94 (New) | 6 | 90 (New) | 95 (New) |
| 24 | 33 (Arist) | 31 (Arist) | 11 | 75 (Arist) | 73 | 30 (Arist) | | | | |
| 24 | 76 (Arist) | 33 (Arist) | 31 (Arist) | 75 (Arist) | 73 | 53 (Rub) | | | | |

| Les. | Per | Classes | | | | | Teachers | |
|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 3a | | | | | New | |
| 10 | 3 | 3b | | | | | New | |
| 8 | 2 | 2b | | | | | New | |
| 92 | 4 | 3b | | | | | New | |
| 74 | [illegible] | 4 | | | | | Curie | New |
| 93 | 5 | 2b | | | | | New | |
| 94 | 1 | 2a | 2b | | | | New | |
| 6 | 1 | 2a | 2b | 3a | 3b | 4 | Callas | |
| 90 | 4 | 2a | | | | | New | |
| 95 | 2 | 2a | | | | | New | |

Take a look at the periods per week: In the longest chain (first row in the middle part of the window), the lesson with the most periods per week is lesson 93 with teacher Newton (5 periods per week). Replacing Newton with another teacher could result in the shortening of this chain by 5 periods per week. Since the couplings all affect each other, however, the chain could be shortened by less than that.

Lesson 93 is Math and another suitable teacher would be Aristotle.

3. In lesson 93, replace teacher Newton ("New") with Aristotle ("Arist").
4. Carry out a new CCC analysis

Now the longest chain is the one with 24 periods (previously the second longest). The previously longest chain now only contains 22 periods. Lesson 93 is no longer a part of this chain.

| Per | Lessons | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 75 (Arist) | 30 (Arist) | 93 (Arist) | 11 | 73 (Arist) | 31 (Arist) | 33 (Arist) | | | | |
| 24 | 75 (Arist) | 76 (Arist) | 73 | 31 (Arist) | 33 (Arist) | 53 (Rub) | | | | | |
| 23 | 6 | 59 (Cer) | 60 (Cer) | 65 (Cer) | 66 (Cer) | 62 (Cer) | 67 (Cer) | 68 (Cer) | 61 (Cer) | 86 (Cer) | |
| 23 | 30 (Arist) | 11 | 7 | 73 | 31 (Arist) | 33 (Arist) | | | | | |
| 22 | 6 | 94 (New) | 90 (New) | 95 (New) | 8 (New) | 9 (New) | 10 (New) | 92 (New) | 74 (New) | | |
| 21 | 6 | 75 | 81 | 94 | 38 (Callas) | 41 (Callas) | 34 (Callas) | 37 (Callas) | 42 (Callas) | 11 | |
| 21 | 75 (Rub) | 76 (Arist) | 30 (Arist) | 54 (Rub) | 73 | | | | | | |
| 21 | 6 | 18 (Hugo) | 15 (Hugo) | 16 (Hugo) | 19 (Hugo) | 17 (Hugo) | 20 (Hugo) | 21 (Hugo) | 86 (Hugo) | 11 (Hugo) | |
| 17 | 6 | 43 | 76 | 79 | 9 (New) | 10 (New) | 92 (New) | | | | |

When the CCC analysis identifies many CCCs with lessons with a large number of periods per week (as a rule of thumb, "large" means "greater than or equal to the number of possible morning periods"), you should investigate the composition of the teacher teams in all the large couplings and if possible, remove the critical elements (teachers). The same applies when the total number of periods of the longest CCC is too high.

For further details on teacher teams, please see the chapter "Teacher teams" on p.267.

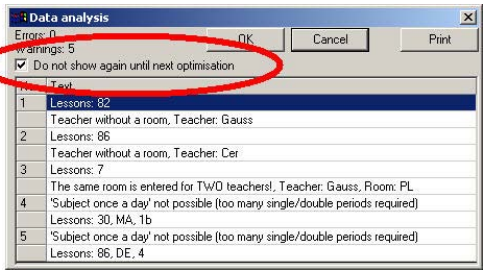
**Note**

The additional module *Lesson Planning* provides an automated teacher swap function. Please see details in the chapter "Optimisation" on p.130.

## Data analysis

The data analysis can be activated in three different ways.

1. Automatically at the start of an optimisation run (e.g. via the optimisation dialogue or the scheduling dialogue);
2. Automatically when opening a saved file;
3. Via "Scheduling | Diagnosis" (see the chapter "Diagnostics tools" below)



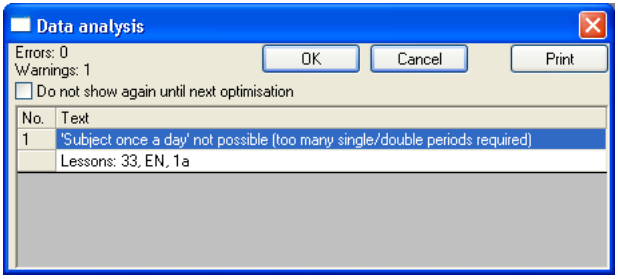

Option 2 above can be deactivated by ticking the box "Do not show again until next optimisation". The next analysis will only be carried out during the next optimisation run, but can then also be suppressed, if necessary.

The data analysis tool checks your input data for consistency, highlights errors and draws your attention to potential problems. Messages referring to actual errors are highlighted in red. When actual errors are identified, it will not be possible to start the optimisation until the errors are resolved.

Messages highlighting *warnings* appear for a number of different reasons. They may refer to settings you have selected on purpose (such as couplings). They could also indicate input weaknesses or errors that could lead to a violation of your settings. Please see the following example (on pg. 126):

**Example**

Your school has lessons on 6 days of the week. The EN lesson is down for 7 periods per week without double periods. gp-Untis will attempt to schedule this lesson as single periods which, however, is impossible without violating the condition that the subject should only be taught once a day.




The data analysis message can be interpreted in two different ways. Either the 7 periods per week are an input error (possibly a typo) or something is wrong with your settings. In the example, the easiest solution would be to schedule at least one double period for the subject by entering "1,1" in the field "Double periods Min, Max" on the "Timetable" tab in the lesson window.

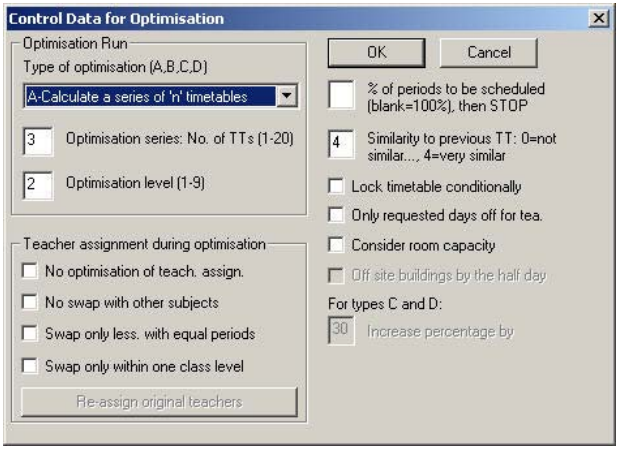
We would strongly advise you to act on the messages displayed by the data analysis tool since the identified problems could seriously reduce the effectiveness of the optimisation tool. For instance, in the example above, the violation of the single period condition would lead to a decrease in timetable quality (penalty points).

# Optimisation

## Control data for optimisation

The optimisation dialogue is accessible via the menu item "Scheduling | Optimisation". The following chapter describes the individual input fields in this window.

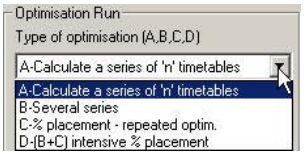



## Optimisation process

You have a choice of different strategies and optimisation depths.

### Optimisation strategy (A, B, C, D)




gp-Untis offers four different strategies for the construction of your timetable. These strategies offer different levels of complexity. Strategy A represents the lowest and Strategy D the highest level of complexity. As a general rule, the more complex the optimisation strategy, the better the result, but the longer it takes the software to compute the result. The differences between the individual strategies are described in a later chapter.

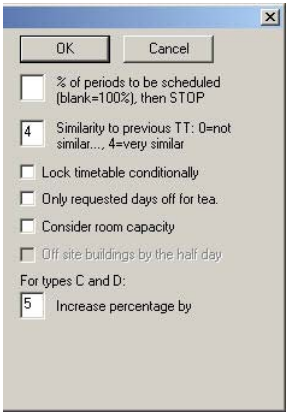
### Optimisation series: Number of timetables (1-20)

**Number of constructed timetables**

Use this option to specify how many different timetables you want the software to construct per series. Each timetable is saved in a dedicated file (*workx.gpn* where x is the number of the file) in the active gp-Untis directory (it is advisable, however, to enter a dedicated path for these work files on the "Directories" tab under "Settings | Miscellaneous"). Depending on the selected optimisation strategy (see the chapter "Strategies" on p.132), the programme will carry out further optimisation runs for the timetables.

### Optimisation level (1-9)

This function allows you to specify the extent of the software's "pre-calculation function" for each optimisation run. Like a chess game programme, the gp-Untis programme calculates before each "move" (i.e. before each placement of a lesson) how the move will affect the situation as a whole.
Depending on the computer, the size of the school and the figure entered for this option, the optimisation of a timetable can take between a few seconds and a few minutes. As a general rule, the longer it takes the computer to arrive at a result, the better the final outcome. In the early stages of a timetable construction, however, long optimisation runs are often counter-productive since initial results often indicate that certain changes need to be made to the input data.




Further input options can be found on the right hand side of the control data window:

### % of periods to be scheduled

Allows you to specify the percentage of periods you want the software to schedule. Leaving the field empty means that the optimisation tool will attempt to schedule all the available periods.

The percentage refers to the periods of the entire school, not individual classes. A percentage of 30%, for instance, may mean that the software will schedule 50% of periods for one class and 10% of periods for another.

**Similarity to previous timetable**

Allows you to specify if and how much the next timetable should resemble the previously constructed timetable. The input options range from 0 (no similarity) to 4 (great similarity). Of course, the new timetable always reflects the modifications you make in the scheduling dialogue between optimisation runs. Leaving this field empty equals a value of 0 (no similarity).

**Lock timetable conditionally**

If you lock the timetable conditionally, the next optimisation run will skip the placement run and only carry out a swap run. This means that the resulting timetable will be very similar to the previous one. This constitutes an even higher level of similarity than the highest similarity setting (4 = great similarity) in the function described above. Use this function when you have carried out manual changes in the scheduling dialogue and want to start another optimisation run. Ticking this option means that your manual changes will be preserved.

**Note**

When you combine the two previous functions by ticking the box "Lock timetable conditionally" and increasing the percentage under "% of periods to be scheduled", the software proceeds by first locking the previous timetable, then scheduling the remaining periods and finally carrying out a swap optimisation run for all the periods.

**Only requested days off for teachers**

Tick this option to instruct the software to schedule only the free days specified under time requests for teachers (and no additional days).

**Consider room capacity**

Activate this function to instruct the optimisation tool to compare the specified room capacity with the number of students in a class or lesson and allocate rooms accordingly.

**Increase percentage by**

This input field is designed for use with strategies C and D and will be discussed in a later chapter.

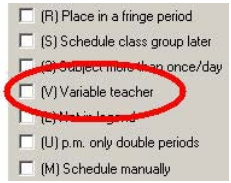
## Teacher assignment during optimisation

When the software encounters bottlenecks during the optimisation run (see also the chapter "CCC analysis"), the programme attempts to bypass them by swapping teachers. If the software finds a suitable teacher and if a swap with this teacher would improve the quality of the timetable, the programme automatically proceeds with the swap during the optimisation run.

The module *Lesson Planning* offers an extended version of this function.

Automated teacher swaps can only be carried out when at least one of the following two conditions can be met:

- The code "(V) Variable teacher" is active for some lessons;
- The function "? teachers" is active for some lessons (for use with the module *Lesson Planning and Value Calculation*)




### (V) Variable teacher

A teacher may only be swapped if the code "(V) Variable teacher" has been activated. You can find this option on the "Codes" tab under "Lessons | Teachers". A teacher who is the cause of an optimisation bottleneck and for whom the code (V) is active may be replaced with another teacher.

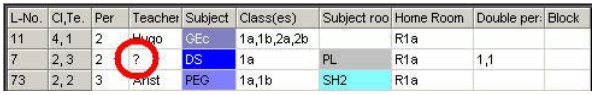
As a rule, the code (V) applies to *all* the teachers of a lesson. Tick the option "Teacher allocation locked" in the appropriate row in the lesson details window (under "Lessons | Teachers") if an individual teacher involved in the lesson should not be swapped under any circumstances. This deactivates the code (V) *for this particular teacher* in this coupled lesson (see example below).



| | Teacher | Subject | Class(es) | Subject room | Home Room | (Teacher) | Teacher allocation locked |
|---|---|---|---|---|---|---|---|
| 1 | Arist | PEG | 1a, 1b | SH2 | R1a | | |
| 2 | Rub | PEB | 1a, 1b | SH1 | R1b | | ☑ |

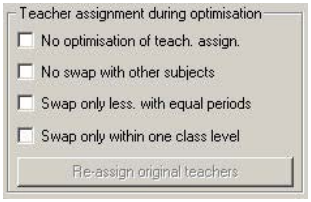
### ?-Teacher

For use with the *Lesson Planning* module. This function enables the software to search for a suitably qualified teacher for the lessons for which this function is active.



| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject roo | Home Room | Double per: | Block |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 4, 1 | 2 | Hugo | GEc | 1a,1b,2a,2b | | R1a | | |
| 7 | 2, 3 | 2 | ? | DS | 1a | PL | R1a | 1,1 | |
| 73 | 2, 2 | 3 | Arist | PEG | 1a,1b | SH2 | R1a | | |

The automated teacher swap function offers the following settings:




### No optimisation of teacher assignment

Ticking this box deactivates the teacher swap function. All "(V) Variable teacher" codes will be ignored.

The following two input options are only available for use with the *Lesson Planning* module.

### No swap wth other subjects

Teachers can only be swapped between lessons of the same subject.

### Swap only lessons with equal periods

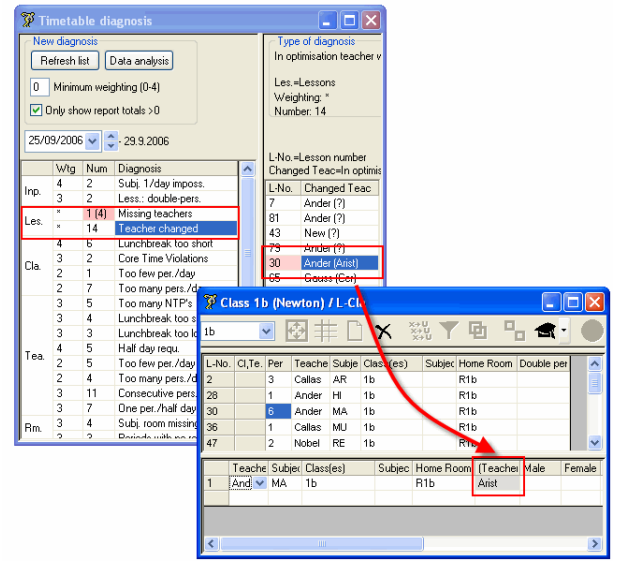
Teachers can only be swapped between lessons with the same number of periods.

### Swap only within one class level

Teachers can only be swapped between classes of the same level.

### Re-assign original teachers

Tick this option to delete all teacher swaps carried out in previous optimisation runs. This means that each subject will again be taught by the teacher originally assigned to the lesson under "Lesson | Teachers".




After a successful teacher swap, a display of all swapped and originally assigned teachers can be viewed via "Scheduling | Diagnosis". The figure on the left shows a situation where the "?-Teacher" function (i.e. teachers suitably qualified to teach the subject) is active and teacher "New" was replaced by "Gauss" for lesson 94.

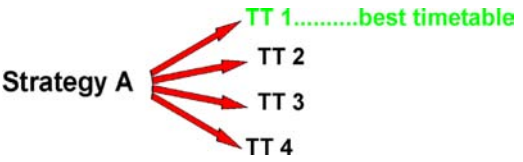
The lesson details window displays the current and the replaced teacher (see figure).

## Strategies

gp-Untis offers four different optimisation strategies for automated timetabling:

### Strategy A - Calculate a series of 'n' timetables

Using strategy A, gp-Untis constructs a series of timetables with n individual timetables where n stands for the number you have entered under "Optimisation series: No. of TTs (1-20)". Each timetable is saved in a dedicated file (*work1.gpn* to *workn.gpn*) in the gp-Untis directory can be retrieved and analyzed at any time.

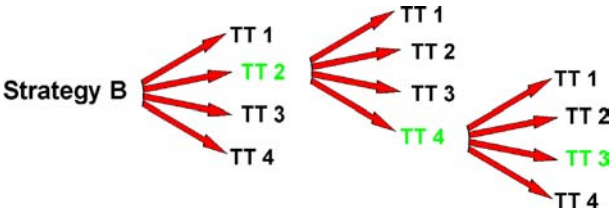



The best timetable is saved as *work0.gpn* and loaded and displayed at the end of the optimisation run.

## Strategy B - Several series

Using Strategy B, gp-Untis initially constructs a series of n individual timetables – as for Strategy A. The best timetable of the series is then used as the starting point for a new series of n individual timetables, all of them very similar to the best previous timetable.

This process (the construction of a series of new timetables, each based on the best timetable of the previous series) is repeated until the final timetable can no longer be improved upon.




## Strategy C - Percentage planning

Using Strategy C, the software constructs a series of n timetables using the percentage of periods specified in the input field "% of periods to be scheduled". If this field is empty, the default value of 30% is used instead. The best of the n timetables is locked conditionally and used as the basis for the next series of n timetables. This run will use a higher percentage of periods, i.e. more periods will be scheduled. When the input field for "Increase percentage by" is empty, gp-Untis automatically substitutes the default value of 10%.

The percentage of periods to be scheduled is increased by increments until the software reaches the point where it attempts to schedule all the periods (100%).

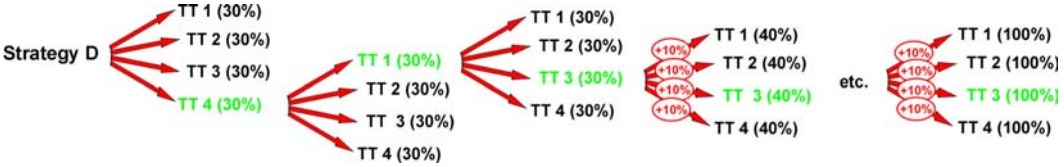


### Strategy D - Percentage planning in several series

Optimisation strategy D is a combination of strategies B and C.

gp-Untis initially schedules the percentage of periods specified under "% of periods to be scheduled", as in Strategy B. This means that the software constructs a number of series of n timetables until the final timetable can no longer be improved upon. As with strategy C, the best timetable is locked conditionally and used as the basis for the next optimisation step where the percentage of the periods to be scheduled is increased by increments. The default value for the increase is 10% (unless you have specified a different value).

The percentage of periods to be scheduled is increased by increments until the software reaches the point where it attempts to schedule all the periods (100%).




## The accompanying window

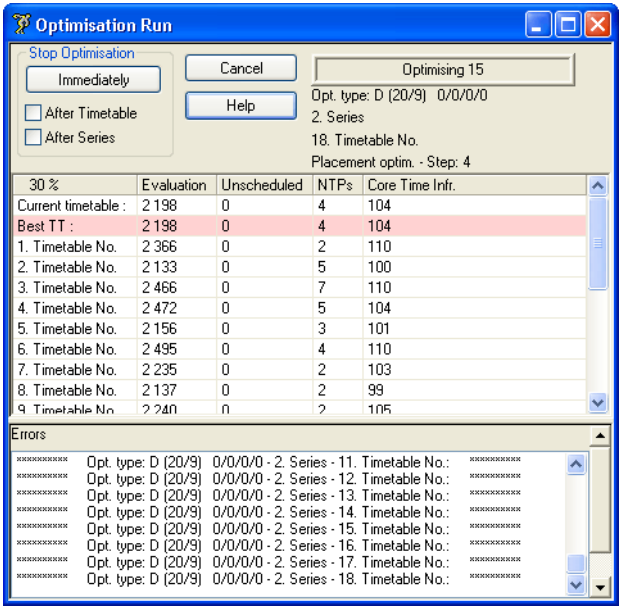



Start the optimisation process by opening the optimisation dialogue under "Scheduling | Optimisation", entering the desired settings and clicking on <OK>.

If the data analysis window appears, check the displayed messages and/or rectify the displayed errors and click on <OK>.

An accompanying window appears. The window consists of three panes:

The upper part of the window is the information window containing functions for the management of the optimisation process (pause, cancel etc.).




The window also provides a continuous display of key data of the current optimisation run, including an evaluation of the current timetable (penalty points), the number of unscheduled periods, window periods (for classes) and core time infringements (these are periods with a time request of +3 that the software is unable to fill for some reason). These data provide a first, rough impression of the quality of the timetable under construction. The tools for a more detailed diagnostic runs are described in the chapter "Diagnostics tools" below.

The middle part of the window is used for the display of errors (i.e. lessons that cannot be scheduled) and the number of timetables and series the tool has finished optimizing. The bottom part of the window is designed to show notes of a general nature.

When the yellow-blue <OK> button appears on the screen, the optimisation run is complete.




**Note**

Open a timetable during an optimisation run to watch the timetable construction process in action.

## Diagnostics tools

The master and lesson data of your school contain a vast store of information and it is often difficult to keep track of the amount of data. This means that it is easy for inaccuracies, mistakes and errors to creep in when entering or modifying data. Searching for these inaccuracies and errors is a bothersome, but necessary task.

The diagnosis tool is designed to facilitate this task.
This chapter not only deals with errors, but also with so-called "input weaknesses". Input weaknesses are data that, while not technically wrong, can cause inferior or unexpected results.

## Percentage planning

After finishing your data entry, you should initially carry out a percentage planning run (e.g. at 30%) to identify lessons that the gp-Untis software categorizes as "difficult". As a rule, the programme attempts to place such lessons as quickly as possible to prevent them from causing an obstruction later during the process.

**Note**

The "difficulty" of a lesson is determined by the number of unavailable lesson elements, the number of element couplings and the size of the lesson block.

**Warning:** Specifying a planning priority for lessons (on the "Timetable" tab) has a profound effect on this aspect of the optimisation process. Do not use this option lightly and use it only when you have good reason to do so!

If gp-Untis encounters problems during the scheduling of the very first 30% of periods and if this very first optimisation run is unable to schedule certain periods, the first thing to do is to increase the number of timetables to be constructed and the number of optimisation steps. If the tool is still unable to schedule the periods, you can assume that the input data contain input weaknesses or even errors.

Errors and input weaknesses are described in greater detail below.

**Example**

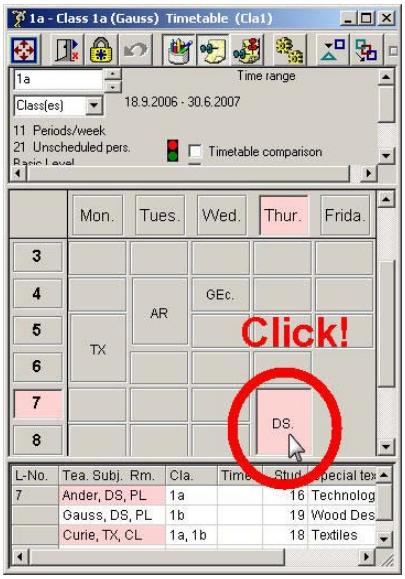
The following example provides a brief introduction to the percentage planning function.

1. Open the file *demo2.gpn*.
2. Delete all timetables via the menu item "Scheduling | Delete the Timetable".

❸ An information window appears. Click on <OK>.

❹ Carry out a timetable optimisation run (via "Scheduling | Optimisation") and enter the value 30 in the field "% of periods to be scheduled".

❺ Display the timetable for class 1a ("Timetable | Classes").




The timetable for class 1a should correspond approximately to the timetable shown in the example on the right. There may be slight variations in display depending on the software version you are using.

As mentioned before, the percentage applies to the entire school and not to individual classes. The example shows that more than 50% of the periods for class 1a have been scheduled. The software would have scheduled proportionately fewer periods for other classes. The high percentage of scheduled periods indicates that the lessons of class 1a are more "difficult" to schedule than the lessons of other classes.

❻ Click on the subject ‘Design’.

The period details window shows that the subject Design is difficult to schedule because three teachers are involved in the lesson (Andersen, Gauss and Curie) and two rooms are required (the Chemistry lab and the Physics lab). Furthermore, another class (1b) takes part in the lesson. If gp-Untis attempted to schedule this lesson towards the end of the optimisation run, the software would find it much more difficult to find a slot on the timetable that would suit all teachers, rooms and classes involved in the lesson.

Two other "difficult" lessons for gp-Untis are English and Math. A CCC analysis highlights the reason for this (see also the example in the chapter "CCC analysis"). Both lessons (taught by Aristotle) are part of the second longest CCC with a total of 24 periods. They are difficult to place because they block the other lessons in this chain while at the same time being blocked by the other lessons in the chain (i.e. they cannot be scheduled at the same time).

When the percentage planning function is unable to schedule periods, you can assume that inaccuracies and errors during data input are to blame.

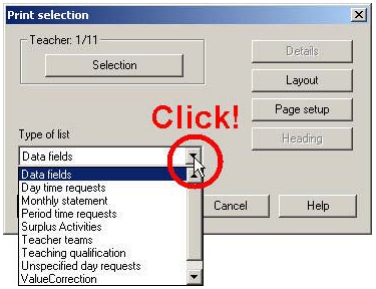
### Time requests

Time requests are another reason why the software may find it difficult to construct the perfect timetable. A number of predefined lists can help you search for input weaknesses and errors caused by time requests. Access the lists by clicking on <Print> or <Print Preview> in the master data or lesson window.

**Print**

**Print Preview**

Under "Print selection", a number of different types of lists are available (e.g. teacher teams, day requests, etc.).




The following example is based on the conflicting period requests of a teacher team. As you can see in the figure below (printout of teacher teams from "Master Data | Teachers"), the only days not blocked for any of the involved teachers are Thursday and Friday.
A lesson consisting of three single periods could not be scheduled for this teacher team without violating a "-3" time request (something the optimisation tool would never do) or the single period condition (something the optimisation tool might do, depending on your weighting

**Teacher Team**

**1** Teacher team

| Name | Monday a.m. | Monday p.m. | Tuesday a.m. | Tuesday p.m. | Wednes.. a.m. | Wednes.. p.m. | Thursday a.m. | Thursday p.m. | Friday a.m. | Friday p.m. | Saturday a.m. | Saturday p.m. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Callas | | | | | | | | | -3 | -3 | -3 | -3 |
| Gaul's | -3 | -3 | | | | | | | | | | |
| Ander | -3 | -3 | +2 | +2 | | | | | | | | |
| Rub | | | | | -3 | -3 | | | | | | |
| Hugo | | -1 | -3 | -3 | | -1 | | -3 | | -1 | | |
| Nobel | | | | | -2 | +2 | | -3 | -2 | +2 | -2 | -2 |
| ?-1 | | | | | | | | | | | | |

6: 1 / CH, MA, EN, DE,

settings for conditions such as "Avoid errors with double period").

For further information on teacher teams, please see the chapter "Teacher teams" on p.267.

### Options

An important point is the distinction between "must" and "can".

The settings "1,1" under "Master Data | Subjects" in the input field "Afternoon periods/week Min, Max" on the "Timetable" tab **forces** gp-Untis to schedule exactly one afternoon period. The setting "0,1", by contrast, **enables** gp-Untis to schedule exactly one afternoon period. If you come across an undesired or even unnecessary afternoon period in your timetable, check the values in this input field. For the same reason, you should try to keep your options open when it comes to double period conditions and enter "0,1" or "1,2".

**Double period condition**

### Locked periods

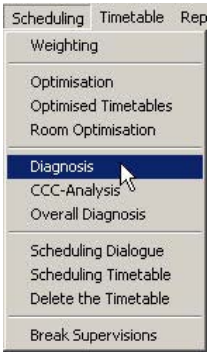
Try not to restrict the optimisation tool by manually scheduling a large number of lessons. Reconsider if some periods really need to be scheduled manually (see also the chapter "Manual timetabling").

### Weightings

When the software is unable to schedule large numbers of periods, it makes sense to call up the weighting dialogue again and to determine if the setting "Extremely important" (5) is strictly necessary in all of the cases. In order to resolve an input weakness, it is often sufficient to reduce the setting of one or two items by one level to "very important" (4) (see also the chapter "General notes" under "Weighting" above) on p. 117.

Increase the percentage of the periods to be scheduled until you are certain that all the input weaknesses have been resolved.

Use the more complex optimisation strategies only when you are certain that all entries are correct.
An important tool for the identification and location of input errors and violations of conditions are the "Diagnosis" and "Overall Diagnosis" tools. These are described in the following chapter.



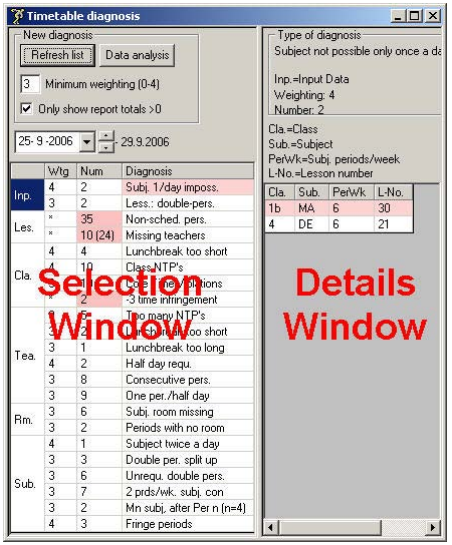

## Diagnosis

After optimizing your timetable, you can analyze the results with the diagnosis function of the gp-Untis software using a number of different criteria.

Open the diagnosis window via the menu item "Scheduling | Diagnosis". The window is divided into two sections – the selection window on the left and the details window on the right.

### The selection window

The largest space in the selection window is devoted to the list of items diagnosed by the diagnosis tool. These items are divided into the sections shown in the left-hand column:




Inp. = Input data
Les. = Lesson
Cla. = Class
Tea. = Teacher
Rm. = Room
Sub. = Subject
Stu. = Student

#### Wtg (Weighting)

The second column is entitled "Wtg" (Weighting) and shows the level of importance you assigned to the individual items in the weighting dialogue.

For example, if the slider for "Respect lunch break requests for classes" is set to 5 (extremely important), the value "5" is displayed in the column "Wtg" for "Lunch break too long" and "Lunch break too short".

An asterisk (*) in this column means that the item is not weightable.

#### Num (Number)

The third column entitled "Num" displays the number of violations of this particular item. In some cases, a second figure appears in

brackets. This figure refers to the number of periods.

For example, the entry "10 (24)" under "Les." for item "Missing teachers" means that there are 10 lessons with a total of 24 periods per week where teachers are missing.

**Diagnosis**

The fourth and last column entitled "Diagnosis" describes the actual item.

Please note that items with a weighting of "5" or marked (*) for non-weightable are highlighted with a different colour under "Num." to indicate that the timetable contains a violation.

Next are the control elements in the upper part of the selection window:

**<Refresh list>**

Click this button to start a new diagnosis run. This also applies when you close the diagnosis window and carry out a new diagnosis run via "Scheduling | Diagnosis".

**<Data analysis>**

Click this button to carry out a data analysis (see the appropriate chapter).

**Minimum weighting (0-4)**

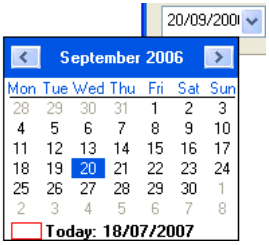
Items with a weighting below the value you enter in this window are no longer displayed. Items categorized as non-weightable (*) will still be shown.

**Only show report total >0**

Tick this box if you want to see only the items where a violation

has been detected on the timetable.

Please note that the diagnosis tool only diagnoses the timetable for one week – an essential precaution when using the modules *Multi-Week Timetable* or *Multiple Terms Timetable* where different timetables may be in use in different consecutive weeks (e.g. for term teaching or block lessons). When analyzing such timetables, specify by means of the date setting (below the control elements) which week you want to analyze.



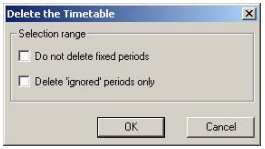

## The details window

The details window on the right-hand side of the diagnosis window allows you to obtain further information about individual items by selecting the item in the selection window. The problem will be displayed in a separate timetable window.

**Example**

The following example demonstrates the function of the diagnosis tool. Depending on which version of gp-Untis you are using, the optimisation results may differ from the results shown in this example.

1. Open the file *demo2.gpn*.
2. Open a class timetable via "Timetable | Classes".
3. Delete the current timetable via "Scheduling | Delete the Timetable". The window "Delete the Timetable" appears. Ignore the two tick boxes and click on <OK>.




4. Open the optimisation dialogue via "Scheduling | Optimisation".
5. Start the optimisation run by clicking on <OK>. The data analysis window appears. Again, click on <OK>.

When the optimisation run is complete, you can see in the optimisation information window that the constructed timetable contains several core time violations (unscheduled periods with the time request "+3"). But you cannot see where these violations occur.

❻ Open the diagnosis function ("Scheduling | Diagnosis").

❼ Detach the "pin" from the timetable (button <Lock Type>). The class timetable now becomes an "accompanying" timetable, which means that the display in the timetable window is now independent from the active window.



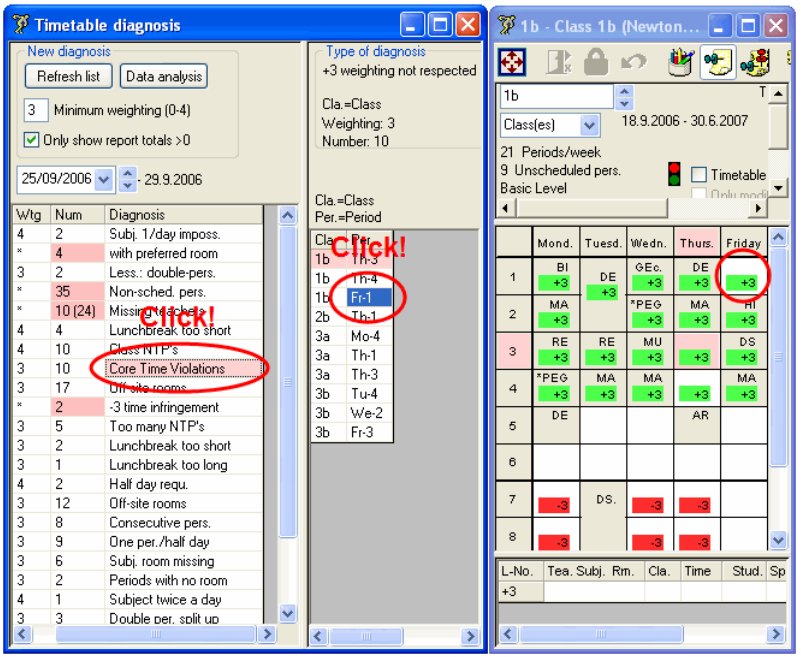
**Lock Type**

✂ Click on "Classes | Core Time Violations".

The details window displays all the classes where core time violations occur and details on which periods are involved.

❾ Click on one of the details in the details window. The accompanying timetable changes to the selected class where the relevant period is highlighted in a different colour.

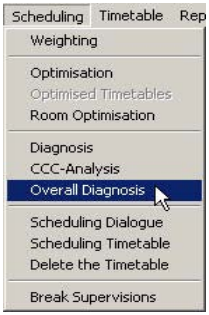
As shown on the timetable in the example, you can also display the relevant time requests. Please see the chapter "User-defined views" under "Timetable display" on p.219 for further information.



You now need to decide if you want to accept the displayed violations or take evasive action. One option would be to increase the weighting for "Time requests for classes" to enable the optimisation tool to place a greater emphasis on this function.

While working with the diagnosis tool, keep checking items to which you have assigned a low weighting as there could also be hidden input errors in areas often regarded as unimportant.

## Overall diagnosis




The overall diagnosis function provides an overview of the classes and teachers that have ended up with the worst timetables (measured against your settings).

Call up the total diagnosis function via "Scheduling | Overall Diagnosis".

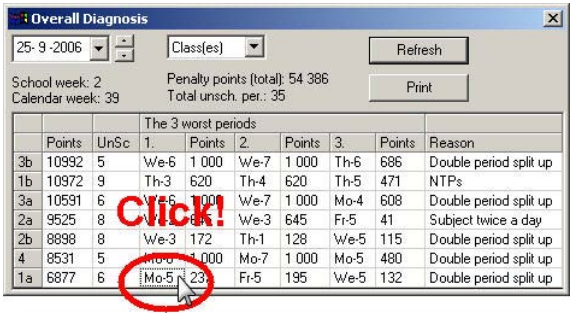
The overall diagnosis function applies to only one week – for the same reasons stated above for the diagnosis function (see previous chapter). Select the desired week via the date combo box.

Next to the date combo box, you will see another box where you can specify if you want to display a teacher list or a class list.

The list itself is organized in order of least desirable timetable. The first column of the list entitled "Points" contains the total number of penalty points. Additionally, the list displays the three worst periods in each timetable, again with their respective values.

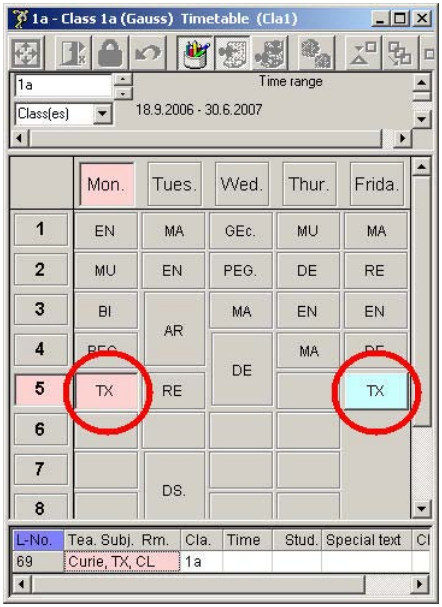
Click on one of the three periods in the list to display the causes of the bad result under "Reason". When you have an accompanying timetable open at the same time, the period is displayed immediately. Please note that when you first open the overall diagnosis window or click on <Refresh> (and before you click on any of the periods), the cause displayed under "Reason" always refers to the first period in the row.

The example shows that the overall diagnosis tool detected a split double period. Click on the entry in the overall diagnosis window to highlight the period in the accompanying timetable. The other periods of this subject – in this case, only one other period on Friday – are also highlighted.




The problem can be resolved by increasing the weighting of point "Avoid errors with double periods" by one level.

An empty field under "Reason" indicates that the timetable for this class or teacher is already very good (i.e. has relatively few penalty points). In relation to the other periods, the displayed period may be one of the three worst placed ones. Overall, however, it is fairly well placed. It is unnecessary, therefore, to change the period manually.




In short, the diagnosis function provides an overview of all timetables while the overall diagnosis function targets the worst timetables in the school and aims to improve them. The overall diagnosis window also displays the causes of violations.

Use the scheduling dialogue to finalize the timetable manually. Ignore the room allocation function until after the room optimisation.

# Manual Timetabling

gp-Untis offers three different manual timetabling options – in the timetable, in the scheduling timetable or in the scheduling dialogue. All three options offer tools for the most important scheduling activities such as placing, moving, swapping, locking and deleting periods as well as allocating rooms manually. More advanced functions and additional information are available with the last two options using the scheduling timetable or the scheduling dialogue.

## Scheduling periods in the timetable

The easiest method of scheduling periods manually – manual timetabling using the timetable – relies on familiar windows and functions. The following tasks can be carried out manually on a normal class or teacher timetable:

- scheduling periods,
- locking periods,
- swapping periods,
- deleting periods and
- allocating rooms.

### Scheduling periods

The aim of this exercise is to place periods in an empty timetable and lock them to prevent the automated scheduling tool from moving them during a later optimisation run.

**Example**

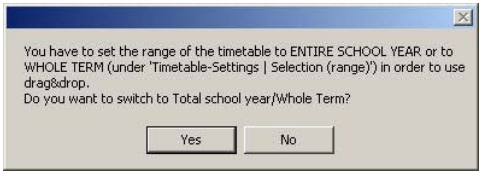
1. Open the file *demo.gpn* and close all open windows (shortcut keys Ctrl - K).
2. Delete the current timetable via "Scheduling | Delete the Timetable".
3. Open a class timetable and a class lesson view.

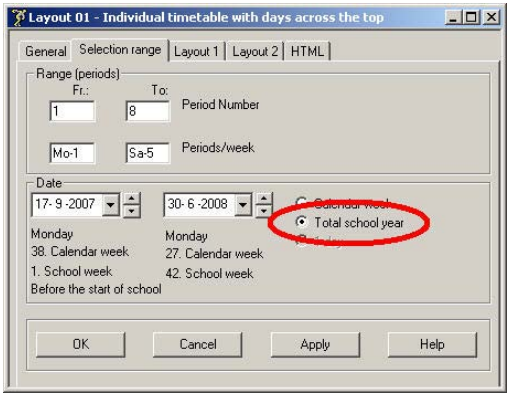
The symbol in the column "Cl,Te." marks all lessons with unscheduled periods.

**Unscheduled Periods**

4. Change the settings under "Timetable | Settings" to "Total school year" (or "Whole term" if using the module *Multiple Term Timetable*) – a required setting that enables the manual Drag&Drop function. If the range of your timetable is set for a calendar week, a message will appear asking you to change the setting.

**Timetable Settings**



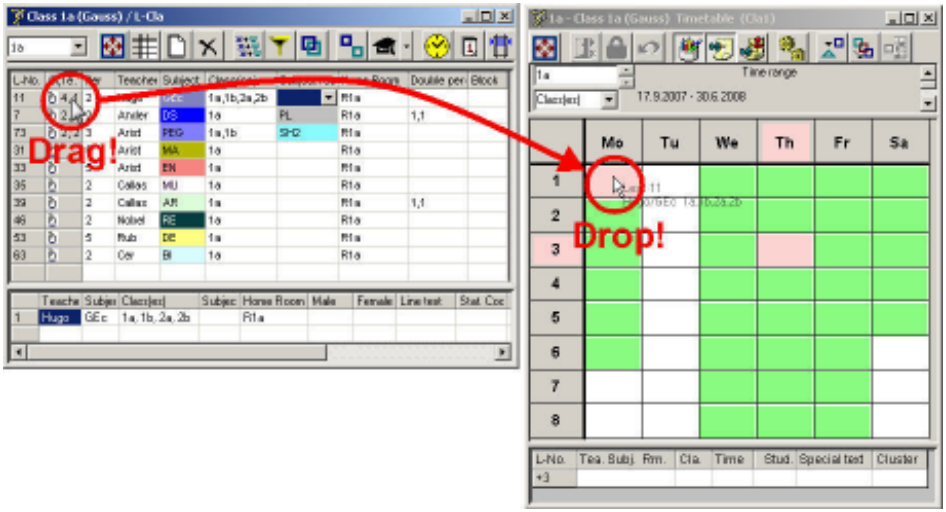




5. Drag the first lesson of class 1a (lesson 11) into the neighbouring timetable window by clicking on the lesson in the second grey column entitled "Cl, Te." and holding down the mouse button (see example on the following page).

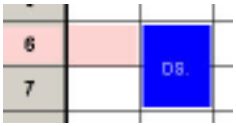
While dragging the lesson away, the lesson details (lesson number, teacher, subject and class involved in the lesson) will be displayed.

Cells with a green background indicate slots on the timetable where lessons may be scheduled without risk of conflicts.

The software also takes into consideration any additional settings you have made. For instance, the display shows that lesson 11 cannot be scheduled on T(""""sdays because teacher Hugo is scheduled to have a free day on Tuesdays ("Master Data | Teachers | Time Requests").

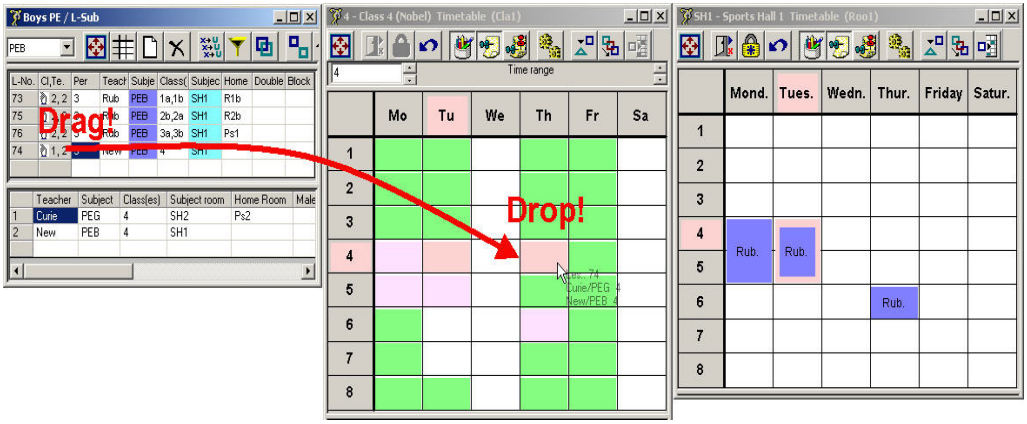



6 Drag the second lesson of class 1a (lesson 7) onto the timetable. Since the settings specify a double period, the lesson is automatically scheduled as a double period.




### Room availabilty

Lesson cells highlighted purple (see example on the following page) indicate that the allocated room (i.e. the designated room or one of its alternative rooms) is not available.

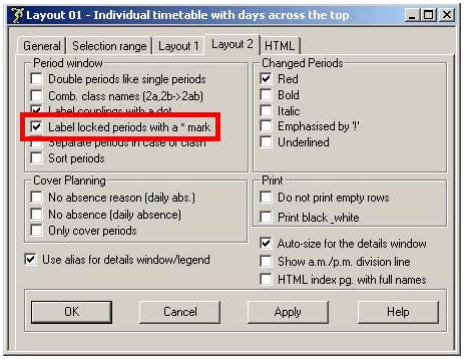


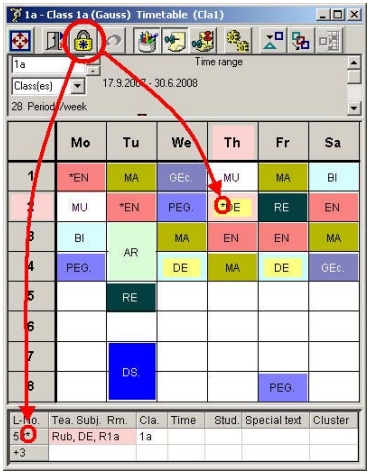

## Locking periods

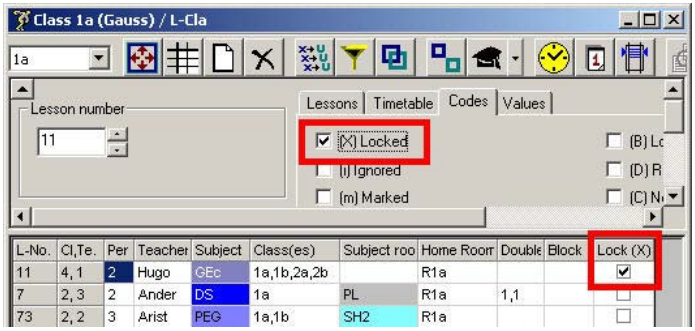
Lock a period in place by clicking on <Lock period> in the tool bar of the timetable. This will prevent the automated scheduling tool from moving the period during a subsequent optimisation run. Alternatively, lock the selected period by pressing F7. The same key can be used to unlock a period.


**Lock period**

Locked periods are marked with an asterisk (*) in the period details window next to the lesson number. The asterisk can also be displayed in the timetable period ("Layout 2" tab under <Timetable Settings>).






If you want to lock all the periods in a timetable, display the column "(X) Locked" in the lesson window (via <Grid Adjustment>) and tick the corresponding box. Alternatively, use the "Codes" tab in the form view of the lesson window. If you want to lock all the scheduled lessons of a class, teacher, subject or room, use the appropriate function in the master data of the element you want to lock.

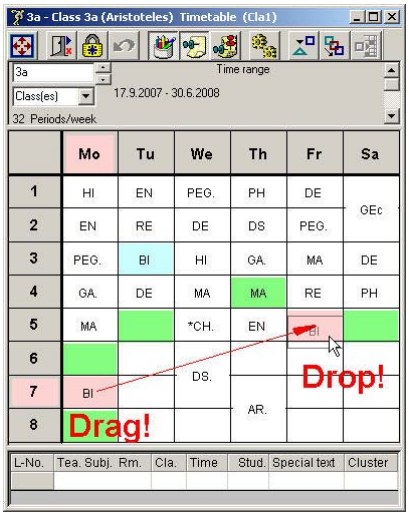
## Moving periods

Periods can easily be moving from one slot on the timetable to another. Please see the following example.

**Example**

1. Open the file *demo.gpn* and close all open windows (Ctrl - K).
2. Open a class timetable and switch to class 3a.
3. Left click on Monday, period 7, hold down the mouse button and drag the period away.
4. Drop the period in any slot on the timetable.

Empty green cells denote slots on the timetable where a lesson may be scheduled without risk of conflict.



Cells highlighted purple indicate that the room allocated to the lesson is not available.

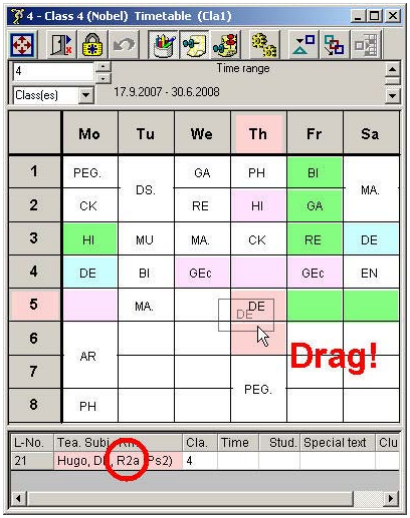
- Open the file *demo.gpn* and the class timetable of class 4.
- Drag away the German period on Thursday, period 5 (hold down the left mouse button).

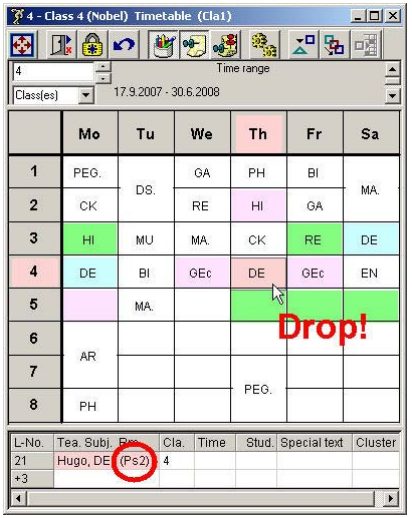
## Room conflict

Purple cells indicate that the room allocated to the lesson (or one of its alternative rooms) is not available. Instead, the lesson can be moved to Thu-4 and Mon-5 without creating a conflict with another class or teacher. The lesson could also be moved to purple slots Thu-2 or Wed-4. As these are already occupied, however, the move would necessitate a lesson swap.

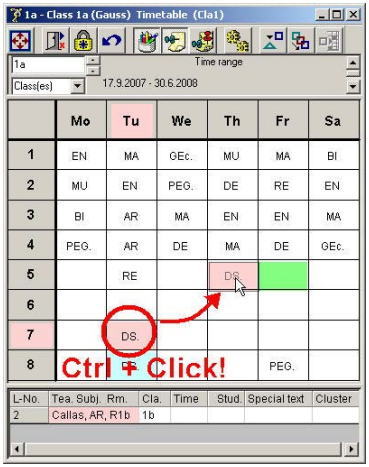
- Drop the period on a purple cell. This means that the lesson will be scheduled without an allocated room. The room allocation for the lesson originally placed in this slot does not change. The example shows that you still need to find a room for the German lesson on Thursday, period 4.

Move double periods and lesson blocks in the same way as you would move single periods. However, if you only want to move one period of a lesson block or a double period, press the <Ctrl> key



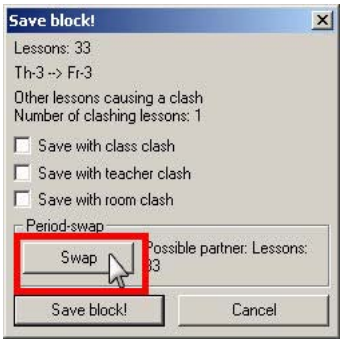



prior to selecting the period you want to schedule. This means that the periods are displayed as single periods and can be moved individually (see example).




## Swapping periods

Periods highlighted green (green cells occupied by a period) can be swapped with other periods highlighted green. Drop a period on a green cell and a window will appear where you can specify if you want to swap the period or if you want to create a conflict.

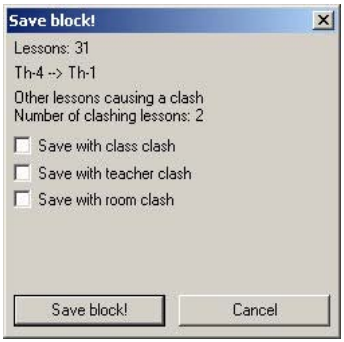



## Scheduling periods with clashes

Moving a period to a non-highlighted cell is not possible without creating a clash. The lesson details window displays the lesson number and details of the lesson in conflict with the moved period.

If you decide to drop the period in such a cell, a window will appear showing the following two options:

- <Cancel> - cancels the move.
- <Save block!> - saves the moved (active) lesson in the cell where you dropped it and de-schedules the lesson originally scheduled in that slot.

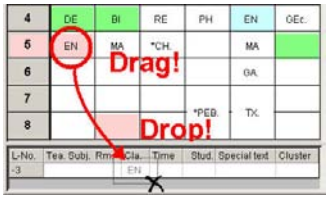



Use the combo boxes "Save with class, teacher or room clash" to schedule a lesson with conflicts.

The period details window displays all the elements of the lessons scheduled at this time. Display co"("""("on the timetable by activating the option "Separate periods in case of clash" ("Layout 2" tab under <Timetable Settings>). Please also see the chapter "Layout 2" in the section "Timetable display" on p.231).

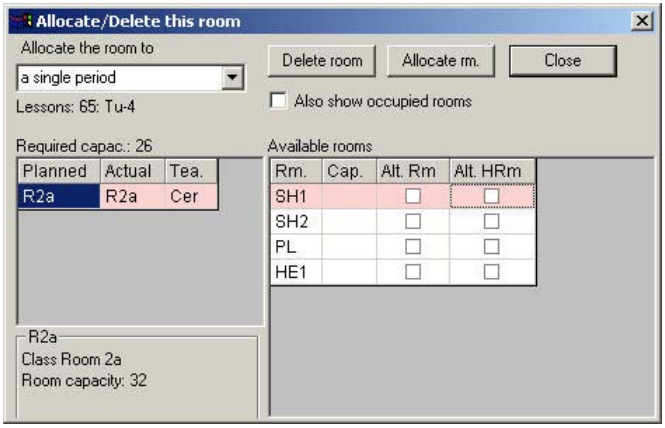
## Deleting periods

Delete (de-schedule) periods by dragging them to the lesson details window and dropping them.




## Allocating rooms

The timetable window also offers options for manual room allocation. Use the button <Allocate / Delete this room> to allocate a room to a scheduled period or to delete rooms already allocated. A detailed description of this function can be found under "The scheduling timetable" in the chapter "Allocating rooms" on p.160.



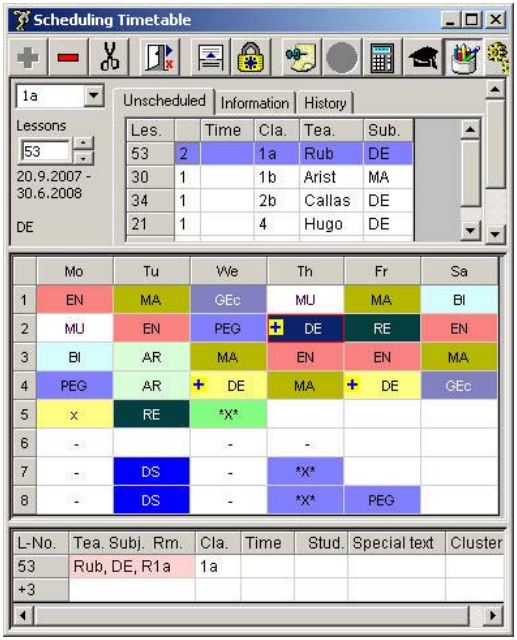
# The scheduling timetable




The scheduling timetable offers a second method of manually modifying timetables. In addition to the functions described in the chapter "Scheduling periods on the timetable" above, the scheduling timetable offers additional functions for manually scheduling lesson periods.

- Open the file *demo.gpn*.
- Open the scheduling timetable via the menu item "Scheduling | Scheduling Timetable".

The display shows the timetable of class 1a with additional information relevant for the scheduling process.




The upper left-hand part of the scheduling timetable displays the active class (1a). All unscheduled lessons are listed on the "Unscheduled" tab. Click on lesson 53 in the list. As you can see, two periods of lesson 53 remain to be scheduled.

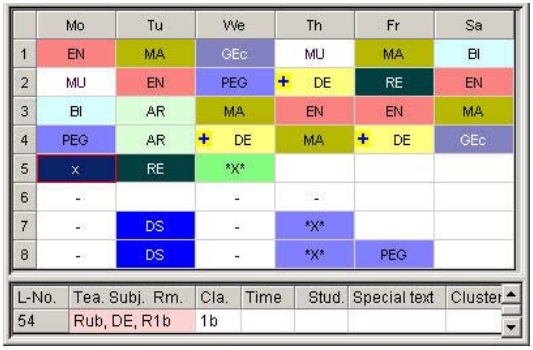
The main timetable window contains a number of scheduled lesson periods together with additional information relating to the active lesson (Subject German; Class 1a; Teacher Rub). This is lesson 53 shown in the example. Please see the following chapter for a detailed description of the additional information shown on the timetable.

## Scheduling periods

**+....** Denotes a period of the "c("v("l"s("n (the three already scheduled periods of lesson 53 in the example).

***....** Locked period of the active lesson (see the chapter "Locking periods" on p.157).

**x....** Fields marked x are blocked by the teacher. For instance, teacher R(" i("alrea(" scheduled to teach class 1a on Mon-5 which means that lesson 53 with teacher Rub cannot be scheduled for Mon-5 without creating a conflict.



| | Mo | Tu | We | Th | Fr | Sa |
|---|---|---|---|---|---|---|
| 1 | EN | MA | GEc | MU | MA | BI |
| 2 | MU | EN | PEG | + DE | RE | EN |
| 3 | BI | AR | MA | EN | EN | MA |
| 4 | PEG | AR | + DE | MA | + DE | GEc |
| 5 | x | RE | *X* | | | |
| 6 | - | | - | - | | |
| 7 | - | DS | - | *X* | | |
| 8 | - | DS | - | *X* | PEG | |

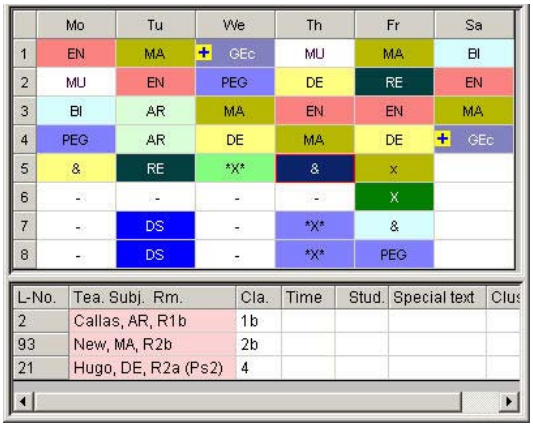
| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud. | Special text | Cluster |
|---|---|---|---|---|---|---|
| 54 | Rub, DE, R1b | 1b | | | | |

**X....** A capital X shows a coupling involving the teacher (e.g. Wed-5).

***x*, *X*, *&*.....** A marker with two asterisks denotes locked periods creating a conflict (e.g. the PE lesson on Thu-7,8 involving teacher Rub). Locked periods cannot be moved by the automated scheduling tool (s"e ("e c("pter '("ocking periods" on p.157).

**&....** Denotes periods with several unavailable elements (classes and/or teachers).

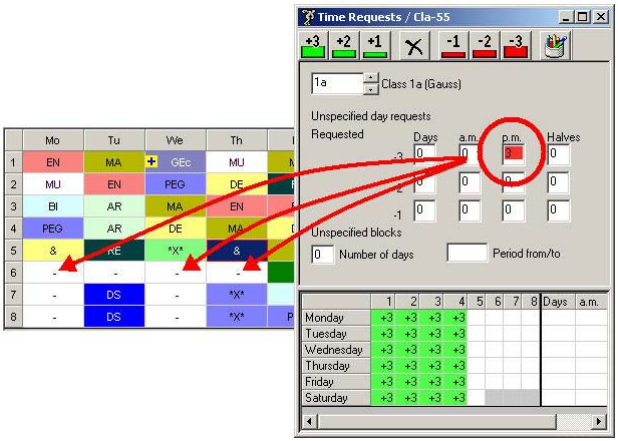
Activate lesson 11 "GEc", class 1a, on Sat-4 by double clicking on the period. The symbol "&" appears in slot Thu-5, indicating that a period of lesson 11 cannot be scheduled for Thursday, period 5, since several elements of the lesson (class 1b, 2b and the teacher Hugo) are unavailable at that time (see example on the right).



| | Mo | Tu | We | Th | Fr | Sa |
|---|---|---|---|---|---|---|
| 1 | EN | MA | + GEc | MU | MA | BI |
| 2 | MU | EN | PEG | DE | RE | EN |
| 3 | BI | AR | MA | EN | EN | MA |
| 4 | PEG | AR | DE | MA | DE | + GEc |
| 5 | & | RE | *X* | & | x | |
| 6 | - | - | - | - | X | |
| 7 | - | DS | - | *X* | & | |
| 8 | - | DS | - | *X* | PEG | |

| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud. | Special text | Clus |
|---|---|---|---|---|---|---|
| 2 | Callas, AR, R1b | 1b | | | | |
| 93 | New, MA, R2b | 2b | | | | |
| 21 | Hugo, DE, R2a (Ps2) | 4 | | | | |

**- ....**The periods on Mon, Tue and Thu not occupied by classes or teachers are marked "-". The symbol identifies periods that cannot be scheduled for another reason. In this case, the reason is a time restriction for class 1a on three afternoons of the week (see <Time Requests> under "Master Data | Classes").




If a cell is available (such as Fri-5 in the example), the cell can be used to accommodate the active lesson.

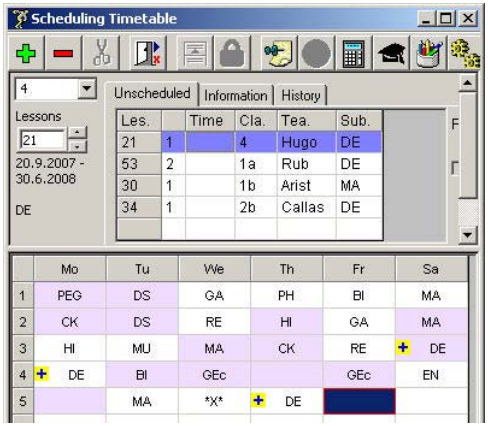
**Schedule period**

Schedule the unscheduled period of lesson 11 by double clicking on the cell Fri-5 or by clicking on .

## Room availability

Click on lesson 21 on the "Unscheduled" tab. As you can see, some periods are highlighted in purple. This means that the allocated room and the designated alternative rooms are unavailable.

For purposes of clarity, the colour codes defined under master data and displayed in the scheduling timetable can be deactivated by clicking on "Show lesson colours".




## Locking periods

Lock scheduled periods by clicking on <Lock period> if you want the scheduling tool to ignore them during the optimisation run. Locked lessons are marked with asterisks (✱, *x*, *X*) and cannot be moved by the optimisation tool.

**Lock period**

## Swapping periods

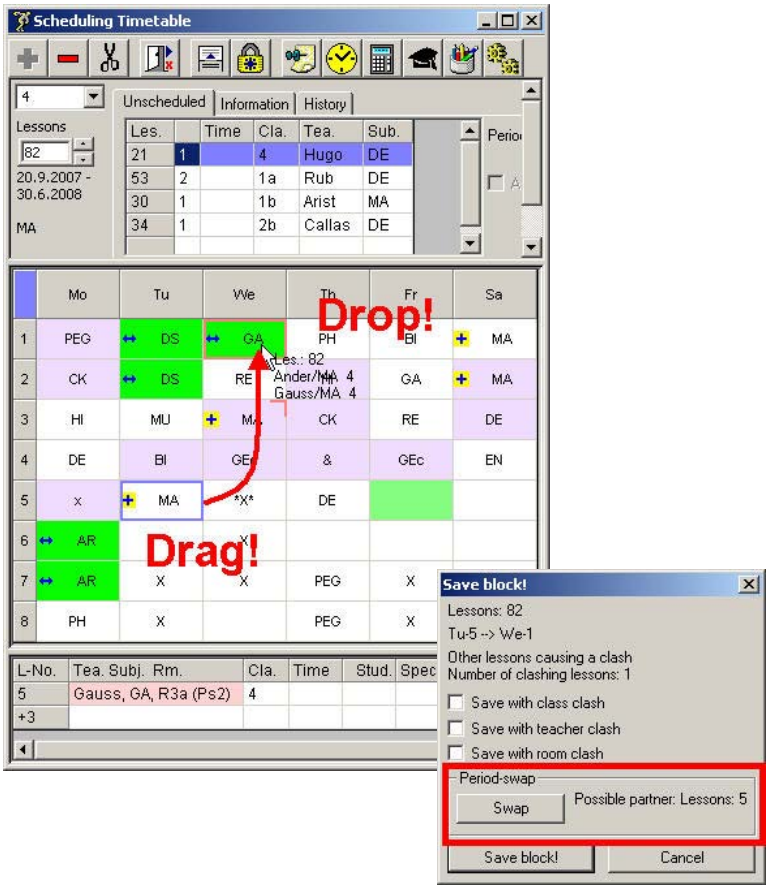
Find a suitable swap partner for a period on the same class timetable by dragging the period away (hold down the left mouse button). Every period on the timetable suitable for swapping will be highlighted in green and marked with a double arrow. Drop the period in a slot of your choice and confirm the move by clicking on <Swap>.

**Example**

1. Open the file *demo.gpn* and the scheduling timetable.
2. Switch to class 4.
3. Activate the Math period on Tue-5 by double clicking on the period.
4. Drag the period away.

The period can be moved without risk of a conflict to any cell highlighted green (Fri-5 and Sat-5). The period can be swapped with any period highlighted green and marked with a double arrow ↔.

5 Drop the period on the cell Wed-1 (GEc) and confirm by clicking on <Swap>.



## Scheduling periods with conflicts

As a rule, the gp-Untis software assumes that each teacher, class and room can only be involved in a single lesson at any one time. The software displays a warning whenever you are attempting to schedule an element (class, teacher, room) that is unavailable for the period in question.

However, there may be situations when you actively want to provoke such a conflict, for instance when some students of a class take part in one particular lesson and other students of the same class take part in another, but none of the students take part in both lesson.

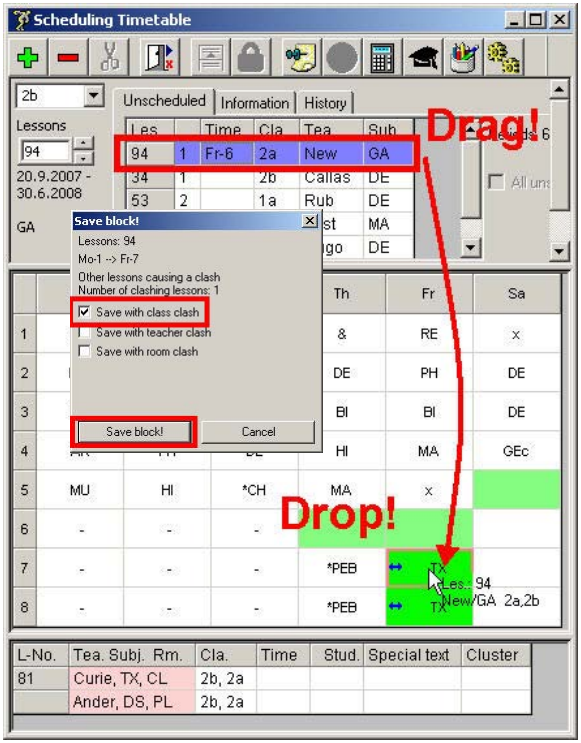
**Example**

You want to schedule Graphics for classes 2a and 2b at the same time as the Textiles lesson.

1. Open the file *demo.gpn* and the scheduling timetable.
2. Switch to the scheduling timetable of class 2b and de-schedule lesson 94 on Friday, period 6 by double clicking on the lesson.

The list of unscheduled lessons now contains one period of lesson 94.

3. Mark the lesson in the "Unscheduled" window and drag it to the textiles period on Fri-7 (hold down the left mouse button). The period details window displays full details of the conflicting lesson.
4. Release the left mouse button. Select "Save with class clash" and click on <Save block!>.



The period details window now shows that two lessons are scheduled for Fri-7 (classes 2a and 2b).

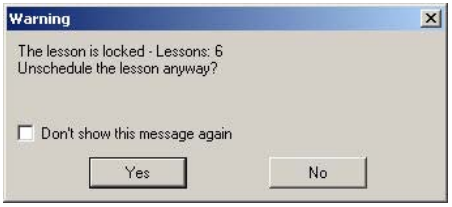
| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud. | Special text | Cluster |
|---|---|---|---|---|---|---|
| 94 | New, GA, R2a | 2a, 2b | | | | |
| 81 | Curie, TX, CL | 2b, 2a | | | | |
| | Ander, DS, PL | 2b, 2a | | | | |

Further options for scheduling conflicting lessons can be found in the chapter "The scheduling dialogue" on p.176.

## Deleting periods

Delete scheduled periods by selecting the period and clicking on <Delete period> or by pressing the <Delete> key. The lesson will appear on the "Unscheduled" window again. Alternatively, delete the active lesson with a double click.

**Delete period**



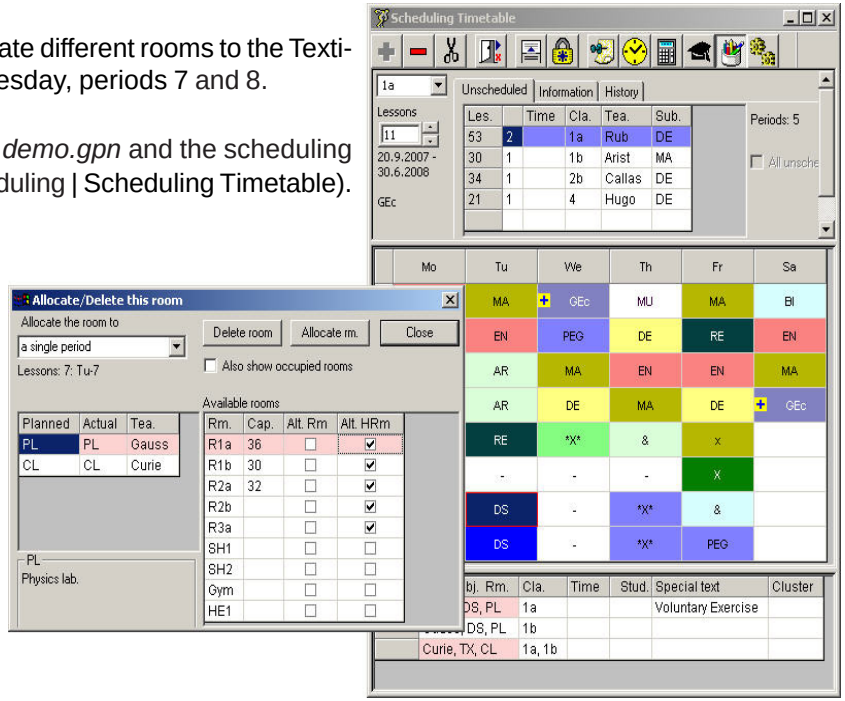

When attempting to de-schedule a locked period, a message will appear asking you if you wish to proceed.

Periods can also be de-scheduled by dragging them to the period details window (see also the chapter "Deleting periods" on p.153 under "Scheduling periods on the timetable").

## Allocating rooms

Use the button <Allocate/Delete Room> to allocate a room to a scheduled period or to delete an already allocated room. This function is available on the timetable, on the scheduling timetable and in the scheduling dialogue.

**Example**
You want to allocate different rooms to the Textiles lesson on Tuesday, periods 7 and 8.




❶ Open the file *demo.gpn* and the scheduling timetable ("Scheduling | Scheduling Timetable).

❷ Place the cursor on Tue-7 and click on <Allocate/Delete Room>. Alternatively, open the window by using the shortcut <Ctrl> - <R>.

The left window of the dialogue box contains a list of all the rooms involved in this lesson.

| | |
|---|---|
| Planned | The desired, designated room for the lesson |
| Actual | The scheduled room |
| Te. | The teacher assigned to teach the lesson |

Select from the drop-down menu "Assign the room to" for which period you want to change the room allocation:

a) a single period
b) the period block
c) all periods of a lesson

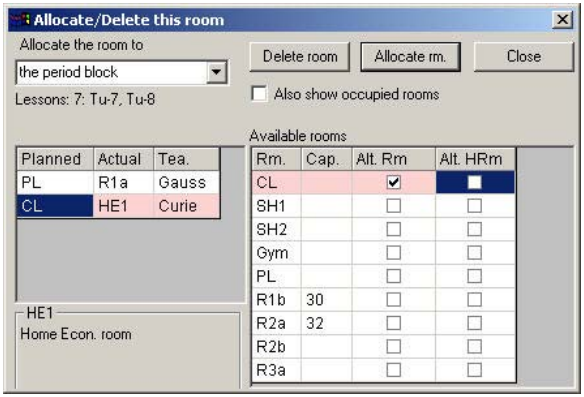
❸ You want to change the room allocation for the double period shown in the example above. Select "the period block".

The right half of the win"ow ("spla(" the list (" available rooms.

Rm.: The abbreviated name of the room
Cap.: The room capacity (if entered under master data)
Alt.-Rm.: The room is an alternative room for the designated lesson room
Alt. HRm: The room is an alternative room for the home room of the class.

In the example (see previous page), the rooms R1a to R3a are marked "Alternative to the home room" since the rooms are part of the alternative room chain for room R1a (home room of class 1a) and for room R1b (home room of class 1b).

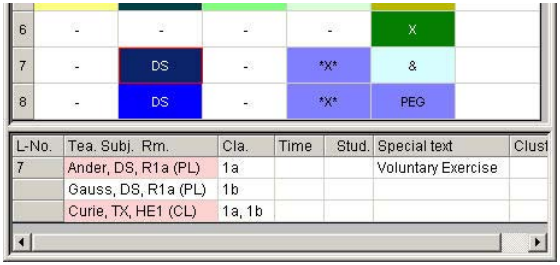
❹ Select a room (e.g. R1a) and click on <Allocate room>. The lesson will now take place in R1a instead of the physics lab.




❺ Click on the second row in the left part of the window and replace the room "CL" with another (e.g. HE1). Alternatively, allocate the new room by double clicking on the room.

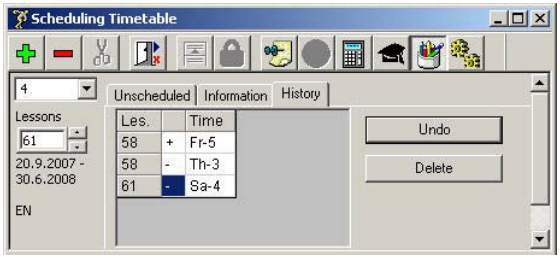
The period details window of the scheduling timetable now displays the newly allocated rooms for periods 7 and 8. The previously allocated rooms for the lessons are shown in brackets.

Click on <Delete room> if you want to delete an already allocated room.



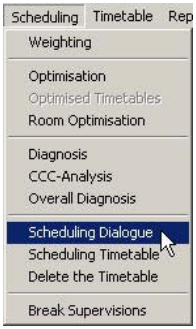

## Undo

Each planning step carried out on the timetable or the scheduling timetable is logged on the "History" tab and can be undone via the <Undo> button. Clicking on <Delete> will delete all the planning steps shown in the list.




All the functions of the scheduling timetable described above are equally applicable to the scheduling dialogue (please see the following chapter).

# The Scheduling Dialogue




The scheduling dialogue offers the most advanced functions for placing and moving periods manually. Similar to a peg board, the periods of the week are arranged in columns at the top and the elements (teachers, classes, rooms) in rows along the side.

The following example provides an overview of the type of information displayed in the scheduling dialogue.

▶ Open the file *demo.gpn* and the scheduling dialogue under "Scheduling | Scheduling Dialogue"'.




## The input field

Ente("the lesson number of the lesson you want to view"or mo("fy (le("on 11 in the("xample) in the input field.

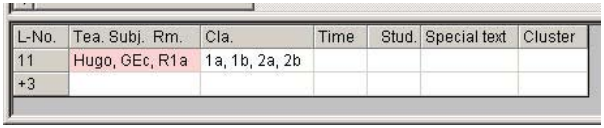
### Lesson search

Instead of entering a lesson number, you can use the input field to search for a particular lesson by entering a combination of details (classes, teachers and/or subjects involved), separated by a comma.

- ▶ Entering 1a,DE will display the lessons of subject DE for class 1a;
- ▶ Entering Arist,1b will display the first lesson teacher Aristotle teaches to class 1b.

## The period details window

The bottom part of the scheduling dialogue shows information pertaining to the active lesson (compare the similar function of the lesson details window on the timetable). For further details on the functions, please see the chapter "Timetable display" on p.210. As you can see, lesson 11 is a coupled lesson involving classes 1a, 1b, 2a and 2b and teacher Hugo. The subject GEc is scheduled to take place in room R1a.



| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud. | Special text | Cluster |
|---|---|---|---|---|---|---|
| 11 | Hugo, GEc, R1a | 1a, 1b, 2a, 2b | | | | |
| +3 | | | | | | |

The middle part of the window contains details on all the classes, teachers and rooms involved in the active lesson for the entire week.

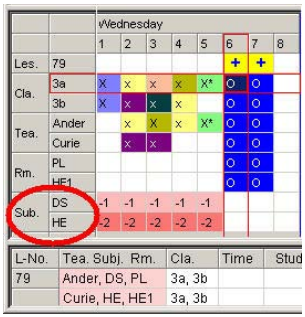
## Period availability

Lesson 11 is scheduled to take place on Wednesday, period 1, and Saturday, period 4, as shown by the symbol + in the first row (lesson row) and the symbol O for all elements involved in the lesson (see example on the following page).

An empty cell in the grid denotes an available period for scheduling an element (teacher, class or room) – for example Fri-5 for classes 1a and 1b. You can easily verify the information by cross-checking the details on the class timetable.

### Time requests

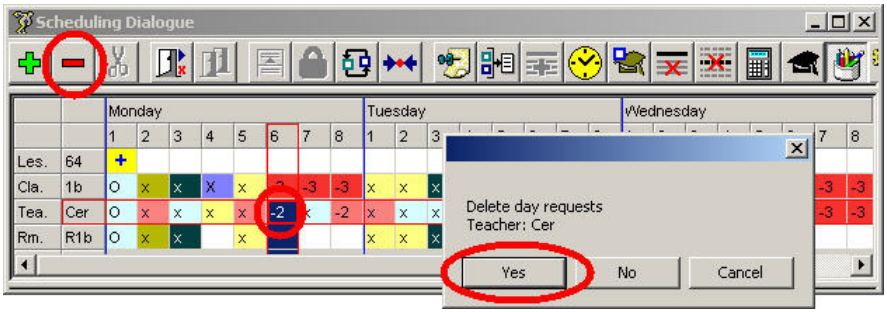
Any time requests entered for the lesson or the elements involved in the lesson are highlighted with their appropriate colour code. Time requests entered under the master data of a subject are displayed in a separate row. The example on the right shows that a time request has been entered for subjects "DS" and "HE".



| | | Wednesday | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Les. | 79 | | | | | | + | + | |
| Cla. | 3a | X | x | x | x | X* | O | O | |
| | 3b | X | x | x | x | | O | O | |
| Tea. | Ander | | x | X | x | X* | O | O | |
| | Curie | | x | x | | | O | O | |
| Rm. | PL | | | | | | O | O | |
| | HE1 | | | | | | O | O | |
| Sub. | DS | -1 | -1 | -1 | -1 | -1 | | | |
| | HE | -2 | -2 | -2 | -2 | -2 | | | |

| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud |
|---|---|---|---|---|
| 79 | Ander, DS, PL | 3a, 3b | | |
| | Curie, HE, HE1 | 3a, 3b | | |

Time requests entered under master data or lessons can be deleted directly in the scheduling dialogue by clicking on − or by pressing the <Delete> key.




## Flags (markers)

Cells containing a flag (marker) (x, X, O, &) denote periods already occupied (see the example below). The different markers have the following meaning:

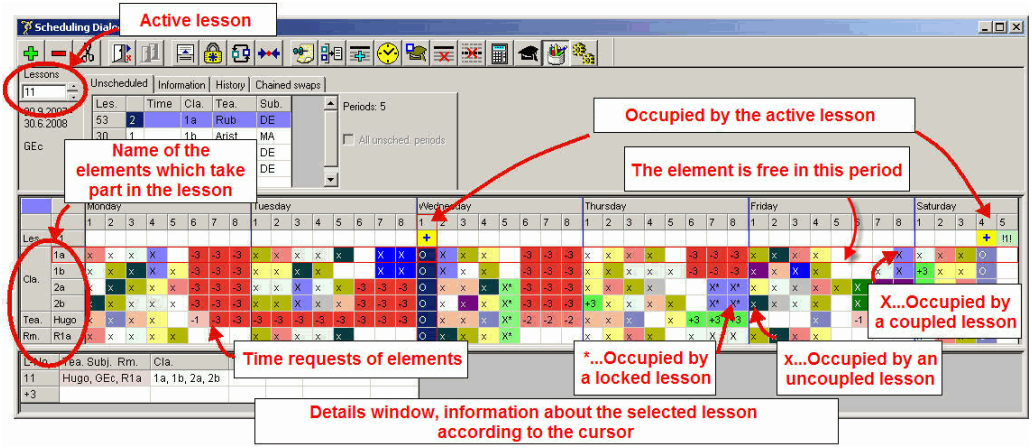
O Occupied by the active lesson
Example: Lesson 11 on Wed-1 and Sat-4

x Occupied by an uncoupled lesson
Example: The classes involved in lesson 11 have an uncoupled lesson on Fri-1.

X Occupied by a coupled lesson
Example: Class 1a has a coupled PE lesson on Fri-8.

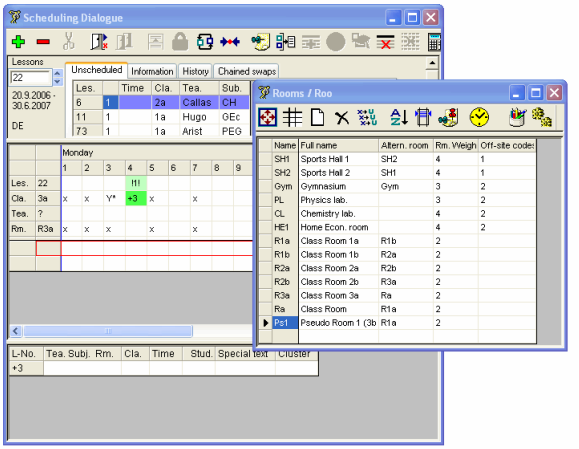
& Occupied by several (different) lessons
(See the chapter "Scheduling periods with clashes" on p.176)

* Locked lesson
Example: The PE lesson of classes 2a and 2b on Thu-7,8 is a locked lesson.



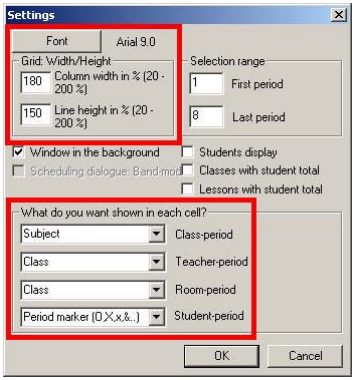
### Flags (markers) for periods in off-site rooms

Instead of x,X, lessons in off-site rooms are marked y,Y (for the first off-site location) and z,Z (for all other off-site locations). See also the chapter "Off-site rooms" on p.290.




### Displaying abbreviated names

Instead of flags (markers) (x,X,& etc.), you can display the abbreviated names of the elements involved in a lesson by selecting the desired names under <Settings>.




In the example, the class rows show the abbreviated names of the subjects, and the teacher and room rows show the class names. The <Settings> function can also be used to change the font size, the column width and the row height. As the example shows, the active period can now be identified by the colon preceding the abbreviated name (e.g. :GEc), and a coupled lesson by a dot preceding the name (e.g. .DS).

| | | Monday | | | | | | | | Tuesday | | | | | | | | Wednesday | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 |
| Les. | 11 | | | | | | | | | | | | | | | | | + | | | | |
| Cla. | 1a | EN | MU | BI | .PE( | | -3 | -3 | -3 | MA | EN | AR | AR | RE | | .DS | .DS | :GE( | .PE( | MA | DE | |
| | 1b | BI | MA | RE | .PE( | DE | -3 | -3 | -3 | DE | DE | RE | MA | | | .DS | .DS | :GE( | .PE( | MU | MA | |
| | 2a | MU | RE | MA | DE | EN | -3 | -3 | -3 | AR | AR | .PE( | BI | MA | -3 | -3 | -3 | :GE( | HI | HI | RE | * |
| | 2b | RE | MA | AR | AR | MU | -3 | -3 | -3 | MA | MA | .PE( | PH | HI | -3 | -3 | -3 | :GE( | MU | TX | DE | * |
| Tea. | Hugo | 3b | 3b | 4 | 4 | | -1 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | :1a | 2a | 2a | 4 | * |
| Rm. | R1a | 1a | 1a | 1a | 4 | 3b | | | | 1a | 1a | 1a | 1a | 1a | | | | :1a | 4 | 1a | 1a | * |

## Saving individual settings

When using the gp-Untis software on two different computers (e.g. at school and at home), you will rarely be working with two identical systems. Differences in hardware (screen display, graphics cards etc.) can necessitate annoying and time-consuming adjustments when switching from one system to another.

Your individual settings for the scheduling dialogue (e.g. font size, column width etc.) are therefore saved in the Untis.ini file located in the Windows directory or your gp-Untis 200x directory, saving you the hassle of having to re-enter your settings when loading the programme on another computer.

Further details on active lessons can be found on the "Information" tab in the details window of the scheduling dialogue (see below).

## The "Information" tab

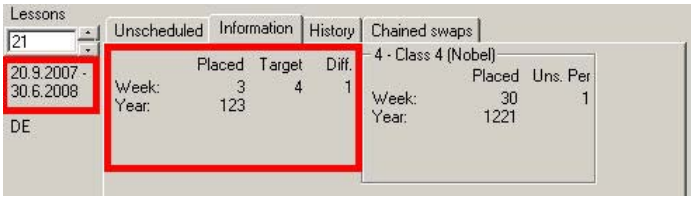
Enter the lesson number "21" in the input field and confirm by pressing the <Tab> or the <Enter> key. The left half of the "Information" tab now provides the following details on lesson 21:

### Placed (Scheduled)

3 periods per week have already been scheduled – a total of 122 periods per year excluding holidays and public holidays. The applicable date range is displayed on the left below the input field (here the total school year). The display also contains details on any time restrictions in place for the lesson.

### Placed, Target, Diff.

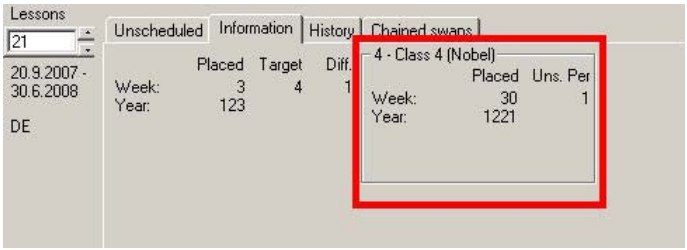
Lesson 21 consists of 4 periods per week, one of which remains to be scheduled, making a difference of 1.




The right part of the tab contains information on the elements involved in the lesson. Place the cursor in the class row to display relevant class details.

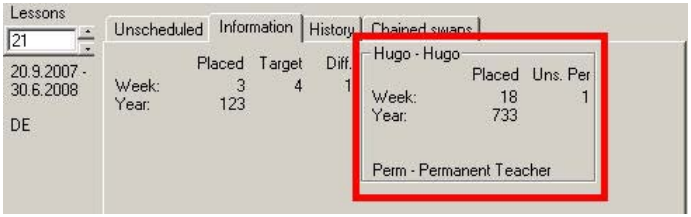
### Class

Class 4 is scheduled to have 31 periods per week in total, 30 of which have been scheduled and one of which remains to be scheduled. The total number of scheduled periods per year is 1221.




### Teacher

Teacher Hugo is scheduled to teach 19 periods per week in total, 18 of which have been scheduled (733 periods per year) and one of which remains to be scheduled.




Any descriptions or special text entered under lessons or master data is displayed below the statistics. The example for Hugo shows that he is employed as a full-time teacher.

## The window logic

Like most functions in the gp-Untis programme, the scheduling dialogue is capable of communicating with all other windows.

### Synchronisation

When you open a lesson view (or a timetable) and select a lesson, the scheduling dialogue automatically displays the active lesson. Vice versa, the lesson window (or the timetable) always displays the lesson selected in the scheduling dialogue.

### Locking the view



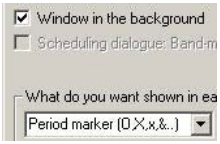
**Keep the source lesson**

Activate the button <Keep the source lesson> to lock the display of the scheduling dialogue.

### Window in the background



**Settings**




As a rule, you can bring a window to the front (i.e. activate a window) by clicking on any part of the window. The scheduling dialogue allows you to suppress this behaviour by activating the option "Window in the background" under <Settings>.

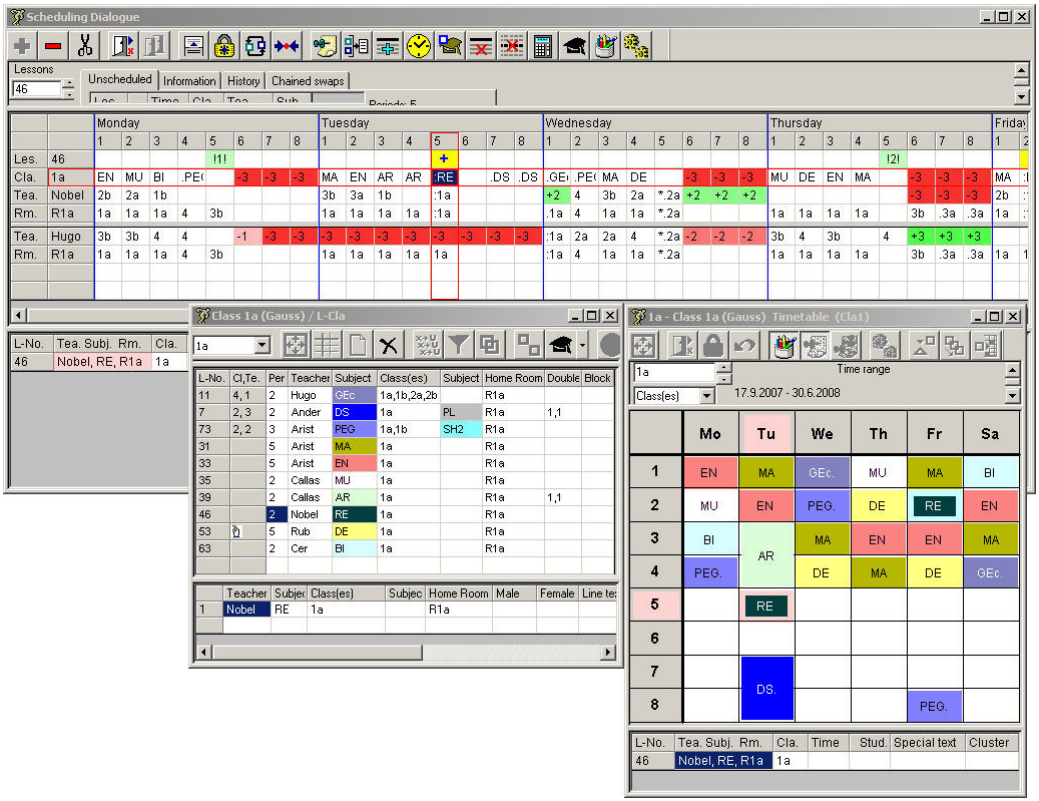
When this function is activated and you want to bring the scheduling dialogue to the front, click on the blue title bar. Although initially an unfamiliar thing to do, activating the window in the "ackgro("d offer("a number of a("antages.

For instance, you can cover a part of the scheduling dialogue with a timetable window displaying the timetable of the cursor-selected element in the scheduling dialogue.

Vice versa, the scheduling dialogue always displays the currently active master data element (or lesson or diagnosis item) – even when the scheduling dialogue is in the background.

**Example**

1. Open the file *demo.gpn*.
2. Open the scheduling dialogue and activate it in the background via the option "Window in the background" under <Settings>.
3. Open the window "Lessons | Classes" and the window "Timetable | Classes".
4. Place the cursor in the grid view of the lesson window and scroll from one lesson to the next using the cursor keys ↑ and ↓. Click on different periods on the timetable.



**Keep the current lesson**

As you can see, the scheduling dialogue always displays the active lesson. If you want to suppress this behaviour and "freeze" the scheduling dialogue display, click on <Keep the source lesson>.

5. Click on different lessons in the scheduling dialogue. The lesson window and the timetable now display the same active lesson, and they stay in the front while the scheduling dialogue window remains in the background.

## Scheduling periods

Schedule periods using one of the following options:

- By double clicking on a period;
- By clicking on the button <Schedule the period> ;
- By pressing the <Insert> key;
- Via the context menu (right mouse button). See the chapter "Deleting period blocks" on p.175 for details;
- Via Drag&Drop from the list of unscheduled periods (see the chapter "Scheduling periods with clashes" on p.159) or from the lesson view (see the chapter "Scheduling periods" on p.148) to the period details window;
- By pressing x on the keyboard and then <Enter>.

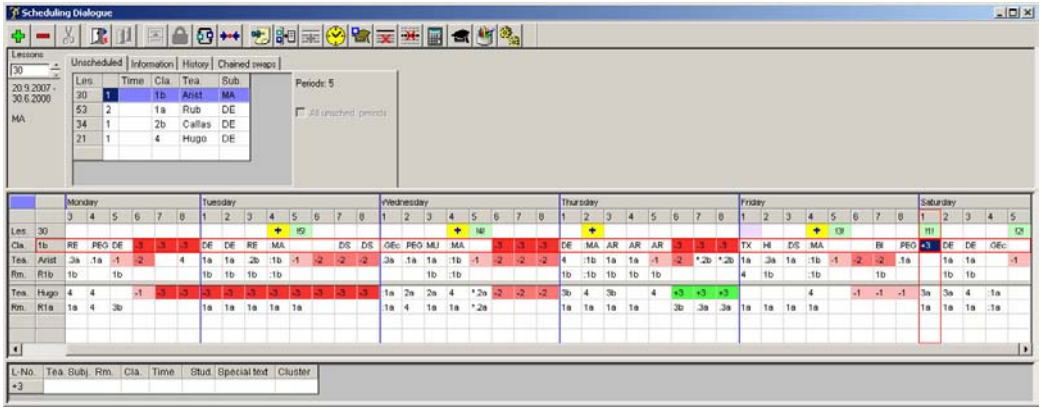
**Example**

1. Open the file *demo.gpn* and the scheduling dialogue.

The "Unscheduled" tab displays all unscheduled lessons.

2. Activate lesson 30 (Subject Math, Teacher Arist, Class 1b).

Four of the five periods of this lesson have already been scheduled. All the positions where the remaining period can be scheduled in the grid are marked with the symbol !! and a number (e.g. !2!) in the lesson row. The lower the number, the more suitable the slot for scheduling the remaining period.




The example shows that Sat-1, marked !1!, is the most suitable slot for the lesson. The deciding factors are the core time for the class (+3) and the fact that scheduling the period at a different time would create a non-permissible double period (e.g. Fri-4,5) and violate the time request of teacher Arist (-1).

❸ Place the cursor on Sat-1 and click on <Schedule the period>. Alternatively, schedule the period via double click or by pressing the <Insert> key.

When scheduling a period in a slot for which the desired room is unavailable, a warning beep will sound to alert you to this fact.

### Scheduling period blocks

Schedule the two unscheduled periods of lesson 53 for Mon-6,7.

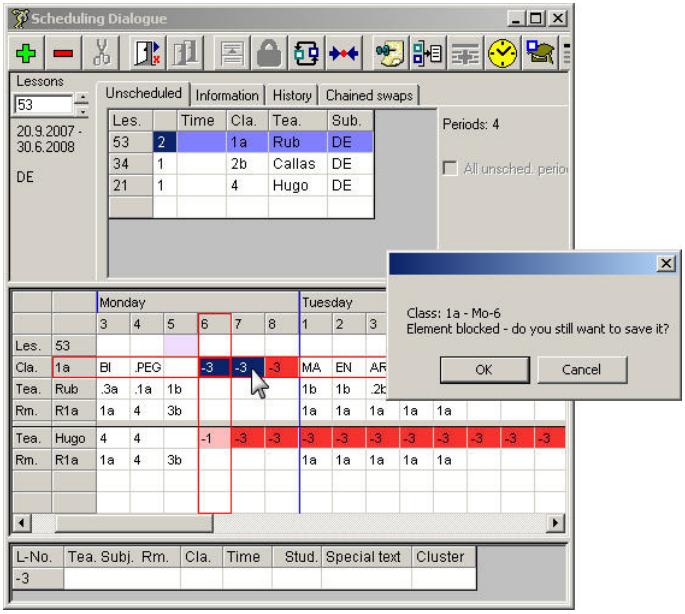
You can schedule the two periods either separately as single periods or in a single step as a double period.

❶ Click on lesson 53 in the list of unscheduled periods.

**Example**

❷ Highlight the periods Mon-6 and Mon-7 with the mouse.

❸ Click on <Schedule the period>.




Monday afternoon is blocked by a time request entered under master data for classes. You can override the restriction by manually scheduling periods on Monday afternoon. Alternatively, delete the time request directly in the scheduling dialogue (see the chapter "Time Requests" on p.165).

❹ The query "Element blocked – do you still want to save it?" appears. Click on <OK>.

The two periods will be scheduled as a double period.

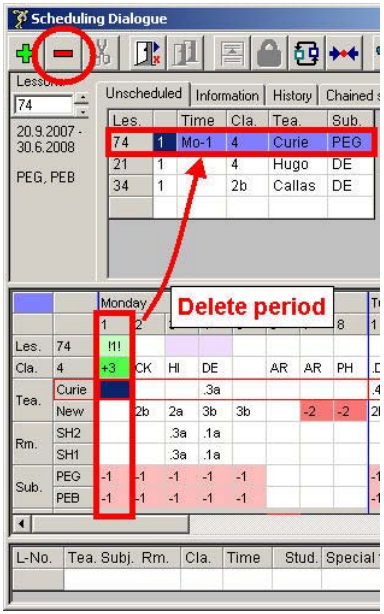
## Deleting periods

Delete (i.e. de-schedule) periods using one of the following options:

- By double clicking on an active period
- By clicking on <Delete period>

Delete period

- By pressing the <Delete> key
- Via the context menu (right mouse button) (see example)
- Via Drag&Drop in the period details window (see the chapter""Delet("g period("' on p.153).




### E("mple

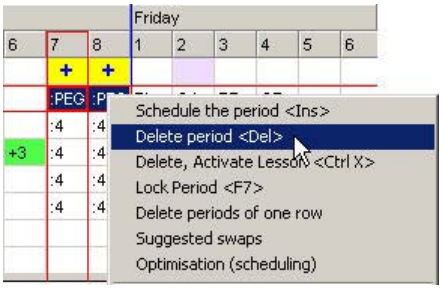
You want to delete the PE lesson of class 4.

❶ Activate lesson 74 in the scheduling dialogue of the *demo.gpn* file.

❷ De-schedule the period Mon-1 via double click. The lesson now appears in the list of unscheduled periods together with an entry showing the time of the original placement (Mon-1) (see example).

### Delete period block

❸ Select the double period Thu-7,8 by highlighting the two periods with the mouse (left mouse button) and delete both periods at the same time, for instance by right clicking (see example).




### Delete periods of a row

Click on <Delete periods of one row> if you want to delete the entire timetable row of a particular element (e.g. class 1a).

**Delete periods of one row**

### Delete, activate lesson

If you want to delete a non-active period and re-schedule it immediately, click on <Delete, Activate Lesson>. This de-schedules the lesson and automatically activates it so that you can schedule it in a different slot straight away. Alternatively, use the shortcut keys Ctrl - X.

**Delete, Activate lesson**

## Schedule periods with clashes

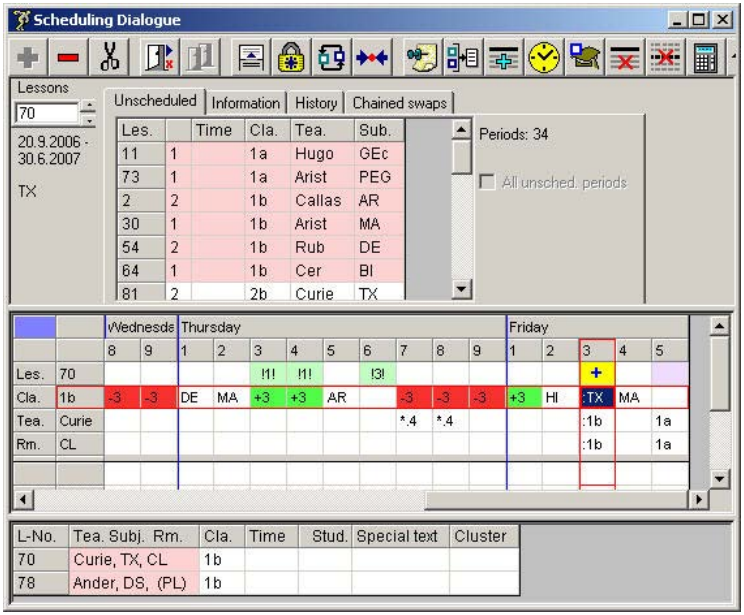
Scheduling periods with clashes allows you to schedule a lesson for a slot on the timetable already occupied by another lesson. This is a useful function especially when scheduling subjects attended by some, but not all of the students of a class.

### Class clashes

**Example**

1. Open the file *Demo2.gpn* and the scheduling dialogue.
2. Activate lesson 70 in the list of unscheduled periods.
3. You want the TX lesson to take place at the same time as the DS class (on Fri-3).
4. Place the cursor on Fri-3.

As you can see in the period details window, teacher Curie and the room CL are available, but class 1b already has another lesson (78) scheduled in this slot.



5. In order to schedule the lesson with a class clash, enter the symbol "&" in the Fri-3 cell and press the <Enter> key.

As a visual reminder of the conflict, the symbol "&" is displayed next to the marker O in the class cell. If you cannot see the symbol "&" properly, simply increase the column width under <Settings>.

### Teacher and/or room clashes

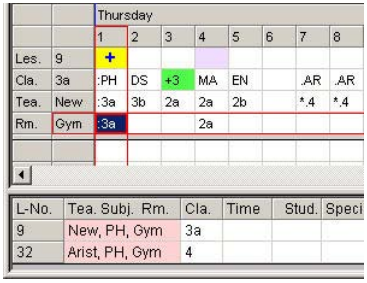
Create teacher and/or room clashes by entering the symbol "&&".

**Example**

You want to schedule lesson 9 in the *Demo2.gpn* file for Thursday, period 1.

- As you can see, the class 3a and the teacher New are available, but the gymnasium is already occupied.
- Place the cursor on Thu-1, enter "&&" and press <Enter>.

The gymnasium on Thu-1 is now double booked with lessons 9 and 32.




Alternatively, schedule a lesson with conflicts by dragging a period from the list of unscheduled periods (see the chapter "Scheduling timetable" on p.159).

## Moving periods via Drag&Drop

Periods in the scheduling dialogue can be moved in the same way as periods on the timetable and the scheduling timetable.

**Example**

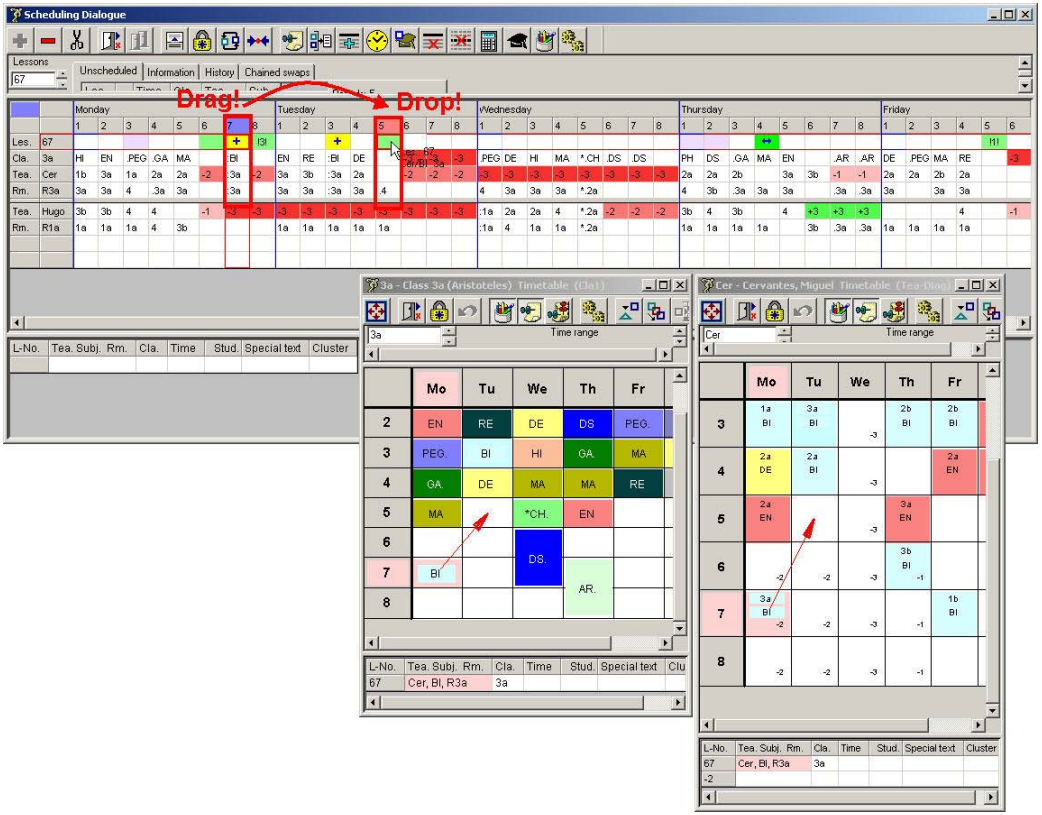
1. Open the file *demo.gpn* and the scheduling dialogue.
2. Open a class and a teacher timetable.
3. Switch the class timetable to class 3a and activate the Biology lesson on Monday, period 7. The scheduling dialogue and the timetable for teachers are automatically synchronized to show this lesson.
4. Click on the period in the scheduling dialogue and drag it away (left mouse button).

Time slots where the lesson can be scheduled are highlighted in green (see the scheduling dialogue chapter "Scheduling periods" on p.173).

When the arrow passes over a scheduled period, the details of the lesson automatically appear in the period details window.

For purposes of clarity red arrow markings show the possible slots on the timetable where the lesson can be moved. You can see at one glance if the move would be advantageous for classes and/or teachers (see example on the following page).

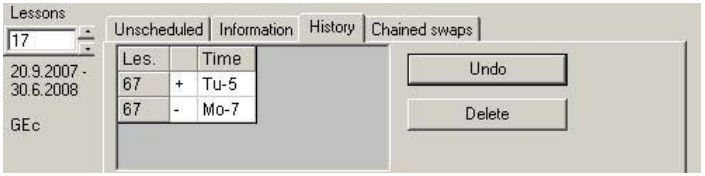
5. Drop the period in a suitable slot (e.g. Fri-5) by releasing the left mouse button.




Periods marked with the symbol ↔ are available for swapping.

## Undo

Each planning step carried out in the timetable, in the scheduling timetable or in the scheduling dialogue is logged on the "History" tab and can be undone via the <Undo> button. Clicking on <Delete> will delete all the planning steps shown in the list.




## Allocating rooms

**Allocate/ Delete room**

Open the room allocation function in the scheduling dialogue via the button <Allocate/Delete room> on the context menu (accessible via right mouse click) or by pressing Ctrl - R. Please see the chapter "Allocating rooms" under "Scheduling timetable" on p.160 for further details on the room allocation function.

When the cursor is placed in the room row under the active lesson and you click on the <Allocate/Delete this room> button, the already allocated room is deleted immediately and replaced with the designated lesson room.

## Room swap

Carry out room swaps between rooms of two coupled or uncoupled lessons by using Drag&Drop.

**Example**

- Open the file *demo.gpn* and activate lesson 33.
- Show the room availability for room R1b by entering the abbreviated name of the room in the last empty row of the scheduling dialogue (see also the chapter "Displaying elements" on p.188).

- Drag the marker of R1a to the row of room R1b in the same column and drop it. The two rooms will now be swapped.




When the room is unoccupied, the room will not be swapped, but simply moved.

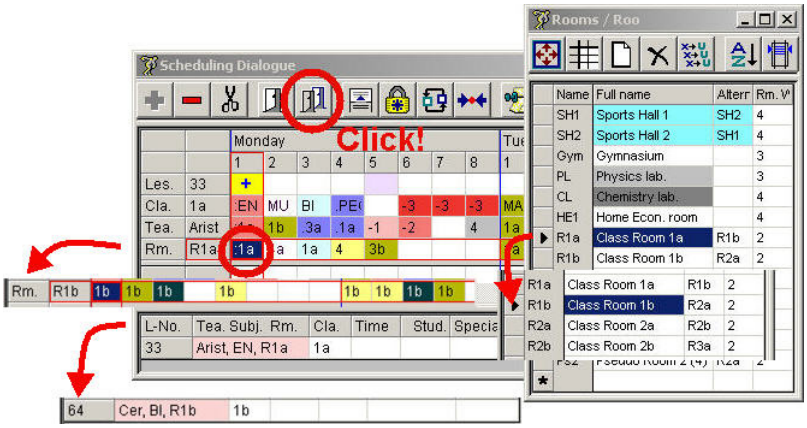
**Note**

For this function to operate, the option <Delete rows> must be deactivated.

## Displaying alternative rooms

**Alternative room**

When the cursor is placed in the room row, the function <Alternative room> becomes active. Click on this button to display the next alternative room specified under master data. In the example, this is the room R1b (first alternative room of R1a). Click again to show the second alternative room (R2a) etc.



## Activate new lesson


**Activate Lesson**

Place the cursor on a lesson and click on the <Activate lesson> button to activate it. Alternatively, use the shortcut keys Ctrl - Enter or double click on the lesson you want to activate.

## Locking periods


**Lock period**

Click on <Lock period> to lock the cursor-selected period or to unlock an already locked period. Locked periods will not be moved by subsequent optimisation runs. Locked periods are marked ✷ in the lesson row of the scheduling dialogue and with an asterisk (*) in the element row.

You can also highlight an entire area in the scheduling dialogue and then click on <Lock period> to lock all the selected periods. The same function is available via the context menu accessible by right clicking the mouse button.

## Optimisation


**Optimisation**

This function allows you to start the optimisation process from the scheduling dialogue. The following options are available:

### Optimisation level (1-9)

This function allows you to specify the extent of the software's "pre-calculation function" for each optimisation run. Like a chess game programme, the gp-Untis programme calculates before each "move" (i.e. before each placement of a lesson) how the move will affect the situation as a whole.

### Placement optimisation

- Number of periods to be re-scheduled

  Enter the number of periods you want the software to schedule. The optimisation tool starts by scheduling the periods most difficult to place.

- Preferred range

  This function allows you to specify certain subjects (e.g. PE) or classes that should receive preferential treatment during an optimisation run.

**Swapping optimisation**

- Over-ride teachers day requests

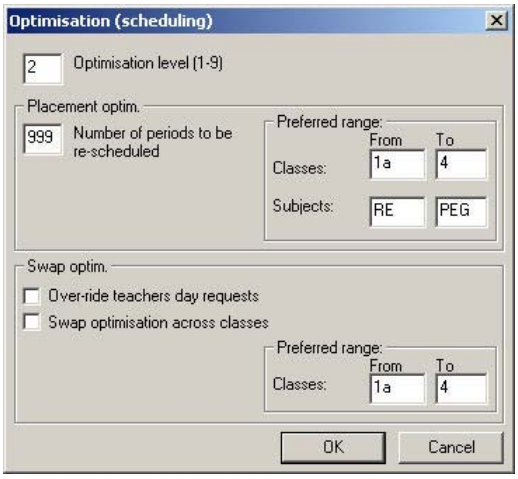
  When a time request entered in the master data for a teacher cannot be met, this function allows the time request to be moved to another day.

- Swap optimisation across classes

  This function enables period swaps between different classes.

- Preferred range

  This function allows you to specify certain subjects or classes that should receive preferential treatment during a swap optimisation run.




When a timetable is locked conditionally, the periods already scheduled will not be affected by the placement optimisation process. The optimisation tool places only unscheduled periods. The subsequent swap optimisation tool, however, may swap all the unlocked periods.

The swap optimisation tool uses optimisation strategy A (see the chapter "Strategies" under "Optimisation" on p.132).

## Assess the active time slot

**Assess the active time slot**

This function assesses all the lesson periods of the week to determine their suitability for scheduling at a specific time.

**Example**

❶ Open the file *demo.gpn* and the scheduling dialogue and activate lesson 30.

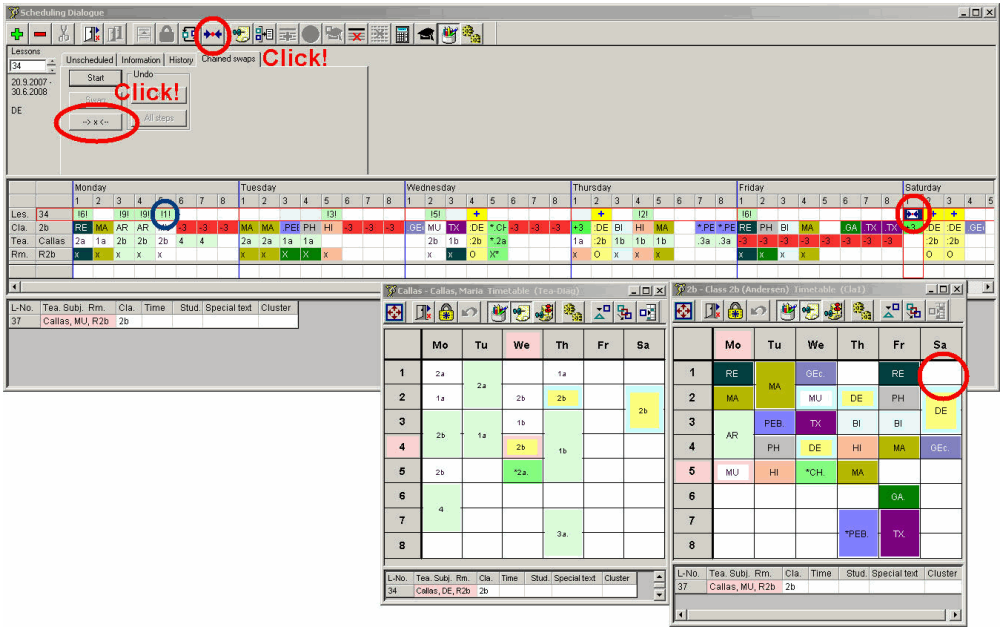
As you can see, there is no lesson scheduled for class 1b on Sat-1. The aim of the exercise is to find an already scheduled lesson that could be moved to Sat-1.

❷ Place the cursor on Sat-1 and click on the [x] button in the tool bar or the [x] button on the "Chained swaps" tab of the scheduling dialogue.

The software now assesses all the periods of the week to determine their suitability for scheduling on Sat-1. The assessment results are displayed in the lesson row. The lower the value, the more suitable the period. The position for which a period is required is marked with the [x] symbol in the lesson row (see example on the following page).

Monday, period 5 (Subject "MU", Teacher "Callas") is marked with the symbol !1! and is therefore suitable for moving. The lower the value, the more suitable the period is for moving.

❸ The period can be moved to Sat-1 via Drag&Drop.




## Replacing teachers

Replace teacher(s)

Use this function in the scheduling dialogue to replace a lesson teacher with another.

Example

❶ Open the scheduling dialogue in the file *Demo2.gpn* and open a teacher timetable.

❷ Activate lesson 6 (subject "CH", teacher "Callas") in the scheduling dialogue.

You want another teacher to replace Callas on Sat-5.

❸ Click on <Replace teacher(s)>.

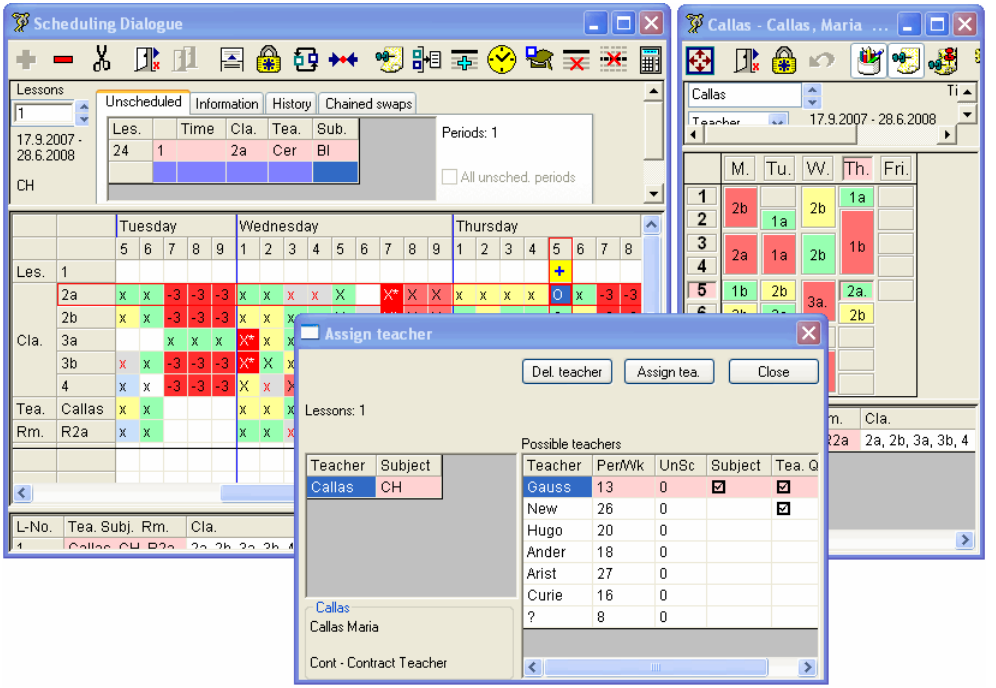
A dialogue box will appear where you can make the desired changes.

The left half of the window displays the teacher(s) of the active lesson. The right half displays all the teachers available (based on their own timetables) to take on ALL the periods of the active lesson.

The following additional details are provided to facilitate the decision-making process:

- Per/Wk: Number of periods per week taught by the teacher.
- UnSc: Number of those periods that remain to be scheduled
- Subject: Teacher already teaches this subject
- Tea. qual.: Teacher is qualified to teach this subject

The example shows that both "Gauss" and "New" are qualified to take on the lesson.




4. Click on teacher "New" and check if the lesson would fit into the teacher's timetable. Assign the lesson to the teacher by clicking on <Assign tea>.

## Display functions

The functions described below can be used to change the scheduling dialogue display.

### Displaying all teachers of a class



**Teachers of this class**

Place the cursor in a class row to display the timetables of all teachers involved in this class. Teachers not assigned to teach a class in this period are listed first, followed by uncoupled teachers.

Place the cursor in a teacher row to display the timetables of all classes in which the teacher is involved.

### Displaying all classes, teachers and rooms



**All classes, teachers**

Use this function to display all classes, teachers and rooms in your school in the timetable rows of the scheduling dialogue. If you only want classes to be displayed, hold down the <Shift> key while calling up this function.

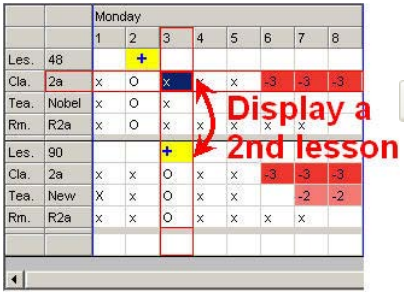
Place the cursor in a teacher row if you want all the teachers to be listed first (under the active lesson). In the same way, place the cursor on a room or class row if you want rooms or classes to be listed first.

### Displaying a second lesson



**Display a 2nd lesson**

This function displays not only the active lesson, but also the lesson on which you have placed the cursor. The function also allows you to display additional information on the cursor-selected lesson.




### Deleting rows



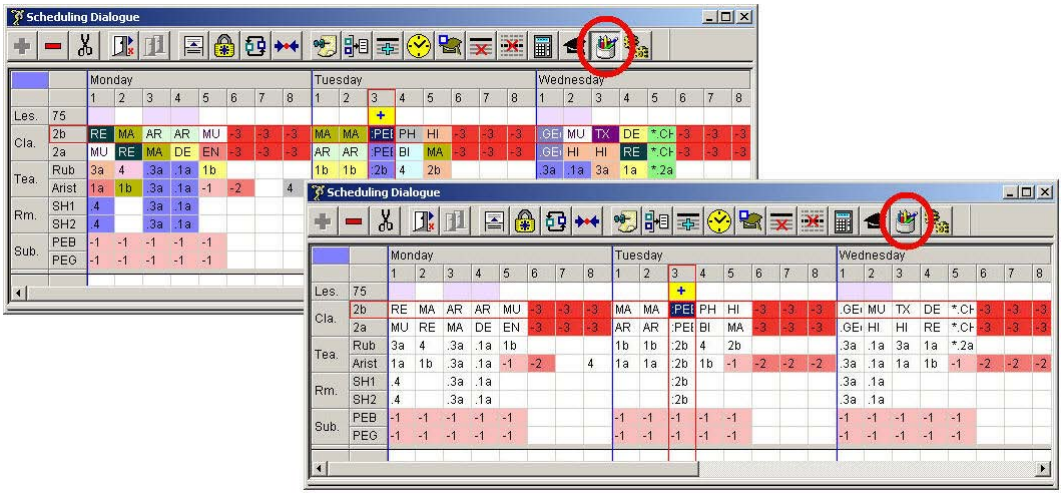
**Delete rows**

Use this function to delete all the rows in the timetable window below the cursor position. Please note that the active lesson will still be displayed on the screen.

## Displaying lesson colour codes

**Show lesson colours**

The colours defined for master data elements and individual lessons can be activated and deactivated via the button <Show lesson colours>.




## Settings

**Settings**

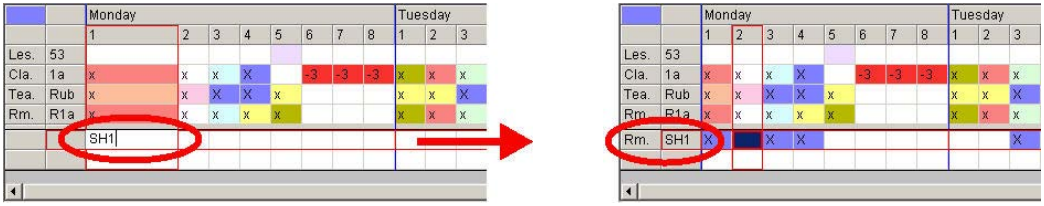
Instead of markers (x,X,& etc.), you can show the abbreviated names of the elements involved in a lesson by ticking the relevant box under <Settings>. The function also offers options for changing the font size and the height and width of cells (see the chapter "Flags" on p.166).

In addition, you can use the function to restrict the display to a specific range of periods (e.g. periods 1-8) and to keep the window in the background.

## Displaying arbitrary elements

To call up the timetable of any element or lesson, simply enter the name of the element or the lesson number in any part of the timetable window and press <Tab> or <Enter>.

For example, enter the abbreviated name of Sports Hall 1, SH1, on the timetable. The software responds by displaying the room availability.

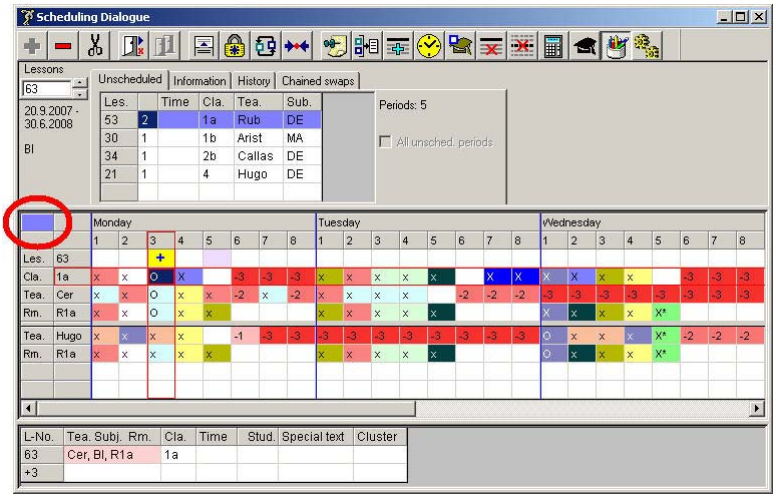



## Shortcut keys

Most of the scheduling dialogue functions can be activated via shortcut keys (i.e. without the use of the mouse).

Use <Ctrl> -<Tab> to switch between individual windows within gp-Untis.

When the scheduling dialogue is open, a purple rectangle highlights the active part of the scheduling dialogue. In the example below, the active cell is marked with a red circle.




Switch between the different parts of the window using <F6> or <Shift>-<F6>.

In the upper part of the scheduling dialogue, use <Alt> -<Left Arrow> and <Alt> -<Right Arrow> to move from tab to tab. Within a tab, use the <Tab> key to move between individual elements.

In the middle part of the scheduling dialogue, use the cursor keys to control the cursor. In addition, the following key combinations are available:

<Ctrl> - <Right Arrow>: last period of the week
<Ctrl> - <Left Arrow>: first period of the week
<Alt> - <Home>: first period of the day
<Alt> - <End>: last period of the day

<Ctrl> - <Arrow Up>: first row
<Ctrl> - <Arrow Down>: last row
<Alt> - <Right Arrow>: next day
<Alt> - <Left Arrow>: previous day

The different scheduling dialogue functions can be called up via the following shortcut keys:

<Insert>: Schedule period
<Delete>: De-schedule period
<Ctrl> - <X>: Delete, activate lesson
<F7>: Lock period
<Ctrl> - <Enter>: New active lesson
<Ctrl> - <R>: Room dialogue
<Ctrl> - <Shift> - <Enter>: 2nd active lesson
<F8>: Alternative room

## Swapping periods

In addition to the period swap function using Drag&Drop, the scheduling dialogue (and to a limited extent, the scheduling timetable) offers additional functions for swapping already scheduled periods. Use these functions when the timetable requires further improvements.

- Suggested swaps
- Consecutive swaps
- Chained swaps

## Swap suggestions

This function offers swap suggestions for a cursor-selected period on a class timetable. To this end, gp-Untis evaluates the timetable based on your weighting settings and informs you if the quality of the timetable would be increased or decreased as the result of a swap.

Open this function by clicking on the <Suggested swaps> button in the scheduling dialogue.


**Suggested swaps**

Any period swaps you make can be undone via the <Undo> button in the "History" tab.

**Example**

1. Open the file *demo.gpn*, call up the scheduling dialogue and open a class and a teacher timetable.
2. Select the class timetable for the class 3a and click on Mon-5.

You want to move the Math lesson of class 3a (lesson 1) on Monday, period 5, to an earlier slot, if possible.

As you can see in the scheduling dialogue, only Fri-5 and Sat-5 are available slots for moving. Consequently, the move would decrease the quality of the timetable.

3. Place the cursor on Mon-5 in the scheduling dialogue and click on <Suggested swaps>.

gp-Untis now offers three different options (see example on the following page):

a) Display of all 2-way swaps (swaps involving 2 swap partners)
b) Display of all 3-way swaps (swaps involving 3 swap partners)
c) Display of all 2-way and 3-way swaps

Per default, the software displays 2-way and 3-way swaps.

The swap suggestion window now displays a list of all possible 2-way and 3-way swaps, sorted by quality (best swap option first).

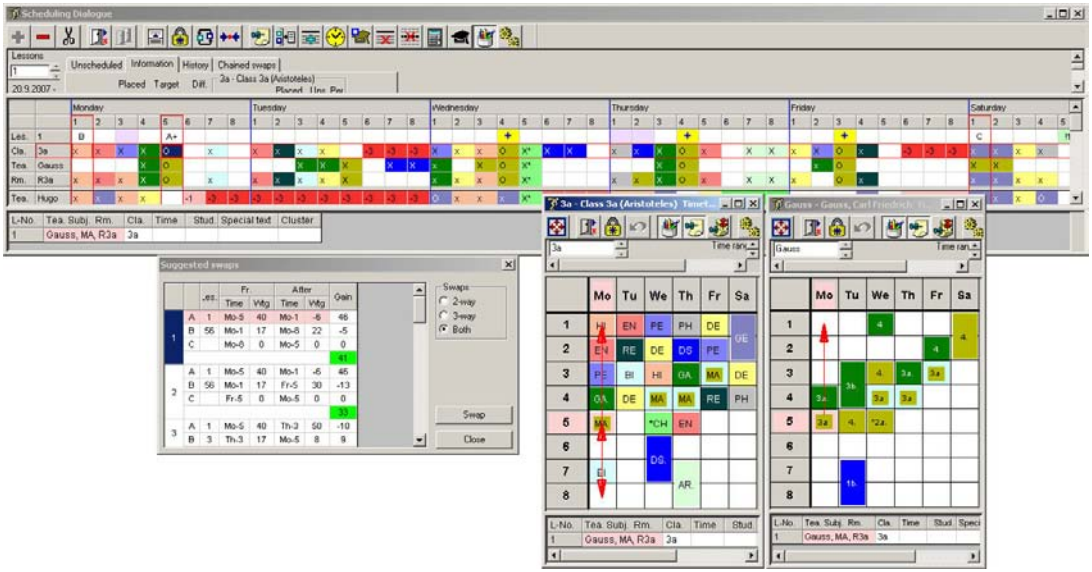
Swap suggestions highlighted in green denote options that would improve the timetable. Suggestions shaded red denote a decrease in timetable quality.

4. Click on the first swap suggestion.

Red arrows mark the swap option on the timetable. In the example, they show that the Math lesson would be moved to Mon-1, the History lesson to Sat-1 and the GEc lesson to Mon-5. The teacher timetables show the corresponding period swap for the teachers involved in the lessons.

The swap positions in the timetable window of the scheduling dialogue are marked A, B and C.

5. Click on <Swap> to confirm the swap.



In practice, you may want to move a lesson to a different slot on the timetable already occupied by another lesson. This lesson would be displaced and would have to be moved to yet another slot. The same swap rules apply to the second lesson: either the software finds a suitable slot for the lesson on the timetable or the lesson will displace yet another lesson. This chain of events will continue until a suitable slot has been found for every lesson.

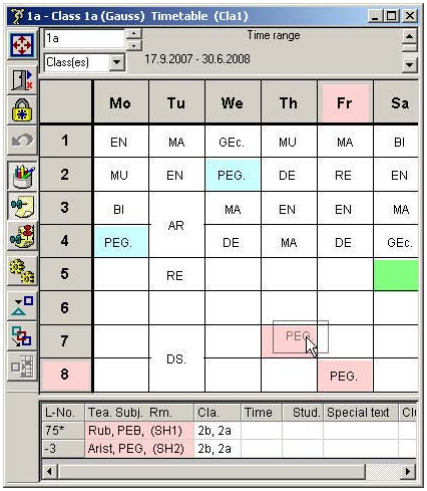
gp-Untis supports this intuitive planning method with the functions "Consecutive swaps" and "Chained swaps".

The main difference between the two swap functions is that consecutive swaps can be carried out using Drag&Drop and also allow period swaps across classes.

## Consecutive swaps

Carry out consecutive swaps in either the scheduling dialogue or in the scheduling timetable using Drag&Drop. This is similar to working with a peg board. You schedule a lesson by displacing another lesson, activate the lesson you have displaced and schedule it in a different slot, activate the next lesson you have displaced (if any) and schedule it in yet a different slot, etc.

❶ Load the file *demo.gpn* and open the scheduling dialogue and a class timetable.

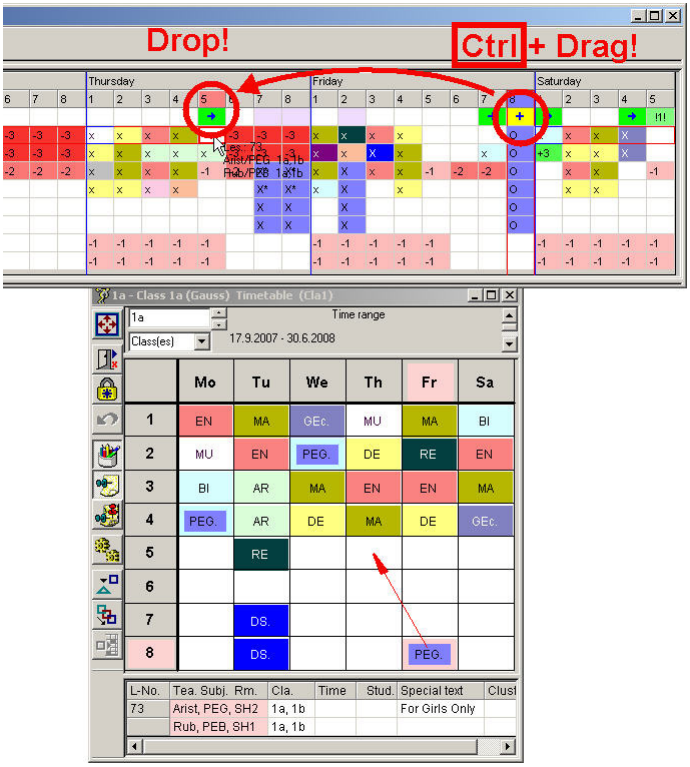



You want to move the PE lesson (no. 73) of class 1a on Fri-8 to a better (earlier) slot on the timetable.

❷ Try dragging the lesson to a different position on the timetable.

You will see that the only available slots are the lunch break on Tuesday and period 5 on Saturday. Neither are ideal options.

❸ Drag the lesson in the scheduling dialogue away from its slot on Fri-8 and simultaneously hold down the <Ctrl> key.



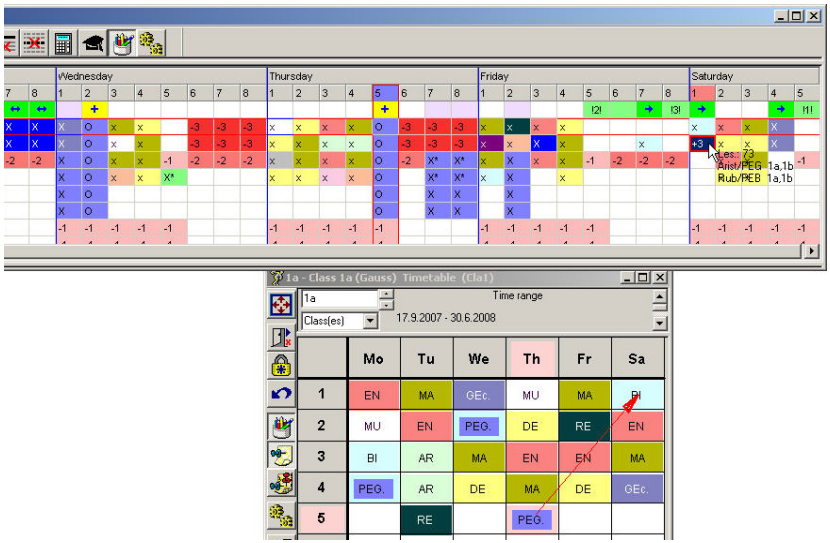

The software displays the symbol → on all slots where the lesson would be blocked by only a single element. For instance, if both the class and the teacher of the lesson to be scheduled in this slot are already involved in different lessons, two lessons would be displaced and the chain would be disrupted.

❹ Drop the PE lesson (still holding down the <Ctrl> key) on Thu-5. This slot is blocked by lesson 2 (Callas, AR, 1b). You will not be asked if you want to create a conflict.

The PE lesson will now be scheduled in this position and lesson 2, the lesson originally placed in this slot, automatically becomes

the active lesson. Drag this lesson to another position marked → and drop it, thereby continuing the chain, or alternatively place the lesson on a suitable unoccupied slot.

❺ A suitable slot for this lesson is Sat-1 where lesson 2 can be scheduled without causing a conflict (as indicated by the !1! symbol). This completes the swap chain.




The PE lesson has now been moved from Fri-8 without requiring the de-scheduling of another lesson.

Slots marked with the symbol ↔ when a period is dragged away denote positions where a period swap is possible.

The symbol !1! signals that a period can be scheduled in this position without displacing another lesson. The lower the value in the symbol, the better the position for scheduling the period.

Please note that consecutive swaps may be carried out across different classes. The only restriction is that the swap path for the continuation of a chain must always be unique. Where there is a fork in the path (e.g. both teacher and class are already scheduled elsewhere), the software will ask you how you want to proceed (create a conflict, cancel etc.) and the chain must be restarted at that point.

## Chained swaps

The chained swaps function is accesible via the <Chained swaps> button in the scheduling dialogue.

**Example**

1. Start the file *demo.gpn* and open the scheduling dialogue and a class timetable.
2. Activate lesson 38 and place the cursor in the row "2a" on Mon-1.

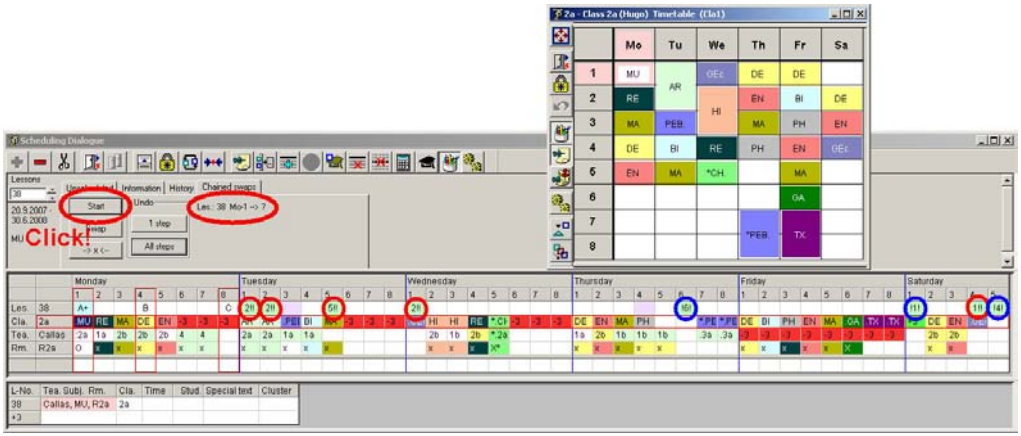
The aim of this exercise is to swap the cursor-defined lesson (lesson 38, Callas, MU, 2a) with a lesson in a different slot.

3. Start the swap chain by clicking on <Start> on the "Chained swaps" tab.

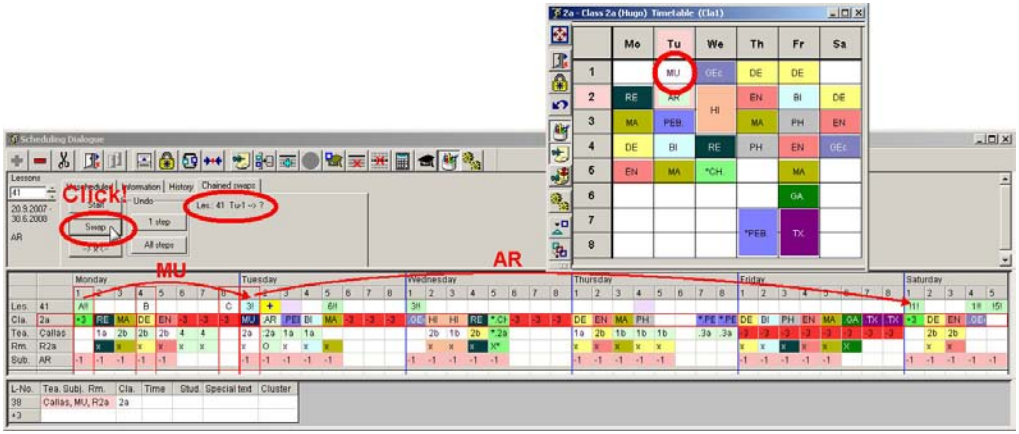
The lesson row now displays a series of number symbols in some of the cells in the time grid. These represent possible swap positions. The lower the value, the better the position. Two exclamation marks behind the number (e.g. 2!!) signify that a swap to this position would displace a lesson already scheduled for this slot. An exclamation mark before and after the number (e.g. !1!) indicates that a swap would not cause a displacement of another period, completing the swap chain (see example on the following page).

You want to move lesson 38 (Callas, 2a, MU) from Mon-1 to Tue-1. This means that one period of lesson 41 (Callas, 2a, AR) will be displaced.

4. Place the cursor on Tue-1 and click on <Swap>.




The original period of lesson 38 has now been moved to Tue-1. The change is also reflected on the timetable. Lesson 41 with one displaced period automatically becomes the active lesson.




Again, gp-Untis marks suitable swap positions with numbers displayed in the lesson row.

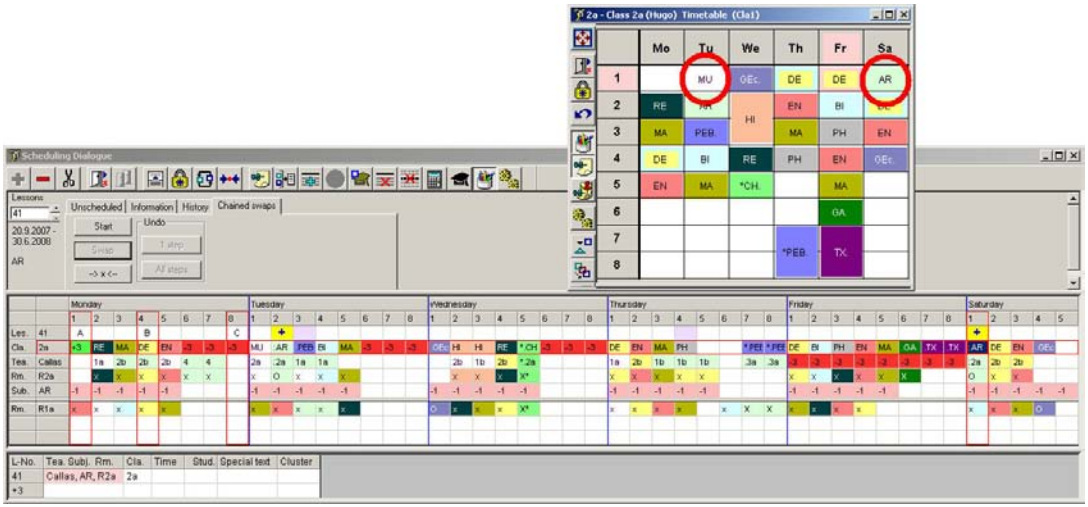
If you are dissatisfied with the swap results, you can undo individual steps of the process and even the entire swap chain.



You want to schedule the displaced period of lesson 41 for Sat-1. The symbol !1! indicates that the swap would not cause the displacement of another period (i.e. the swap chain would be completed).

❶ Place the cursor on Sat-1 and click on <Swap>.

Lesson 41 (Callas, 2a, AR) displaced from Tue-1 has been moved to Sat-1. The swap chain is now complete.




Please note that function "Chained swaps" only supports swaps that do not result in a significant decrease in timetable quality (based on the weighting settings you have entered). This means that only the swap partners identified in the lesson row can be used for swapping.

# Scheduling half periods

The gp-Untis programme can also be used to schedule half periods.

- Open the file *Demo4.gpn*.
- Activate lesson 39 (Callas, AR, 1a).

This lesson with 2.5 periods is scheduled for Monday, periods 1 to 3. The half period is scheduled for the second half of period 1. The scheduling dialogue displays the marker (O for this half period.

Open the timetable of class 1b and activate Monday, periods 4 and 5. Here, the half period is scheduled for the first half of the period. The scheduling dialogue displays the marker O) for this half period.

For two consecutive lessons of half a period each (such as on Friday, periods 3 / 4 for class 1b), the scheduling dialogue displays the marker O)(.

When working with half periods, the following markers can appear in the scheduling dialogue for the active lesson:



Half period in the first half of a period



Half period in the second half of a period



Two consecutive half periods

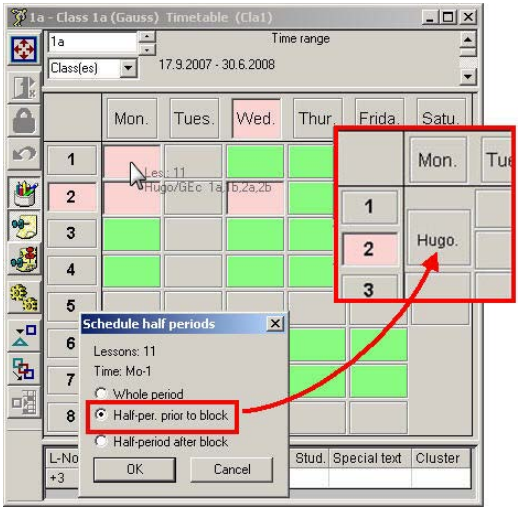
## Scheduling half periods using the timetable

**Example**

1. Open the file *Demo4.gpn.*
2. Set the class timetable to the "Total school year" on the "Selection range" tab under <Timetable Settings>.
3. De-schedule all periods via "Scheduling | Delete the Timetable".
4. Schedule the first unscheduled lesson of class 1a for Mon-1 via Drag&Drop from the lesson window.

When dropping the lesson on the timetable, a dialogue box appears asking you how you want to schedule the half period – as an entire period or as a half period before or after the block (see example).

5. Schedule the half period before the block.

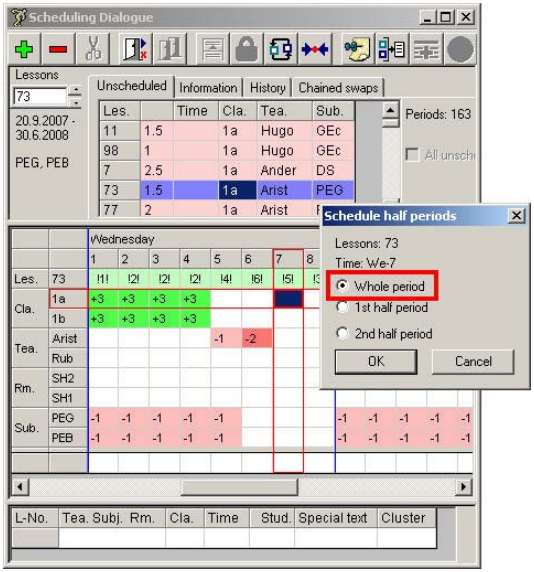


## Scheduling half periods using the scheduling dialogue

**Example**

1. Open the file *Demo4.gpn* and de-schedule all periods (via "Scheduling | Delete the Timetable".
2. Select the unscheduled lesson 73 from the "Unscheduled" tab.
3. Schedule the lesson for Wed-7 by double clicking or by clicking on the button  .

A dialogue window will appear where you can select which part of the period you want lesson 73 to occupy (1st half period, 2nd half period, whole period).

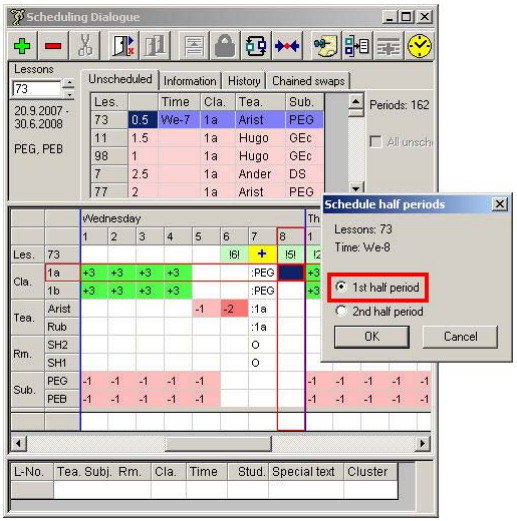



4. Select the whole period.

A whole period of the lesson will be scheduled. Now you need to schedule an additional half period.

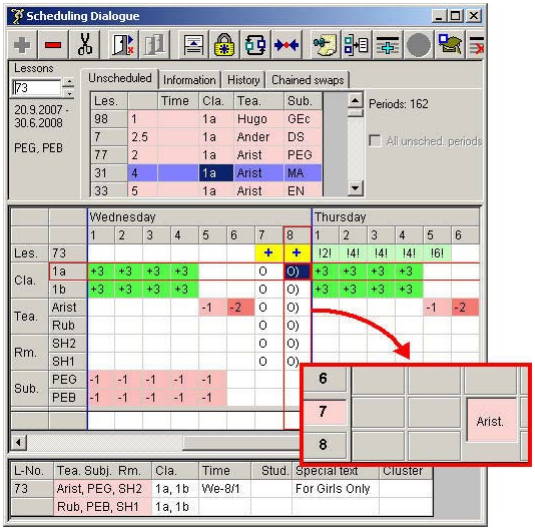
5. Schedule the half period in period 8. You will be asked if you want the lesson to be scheduled in the first or the second half of the period.

6 Select "1st half period" and click on <OK>.




The lesson with 1.5 periods will now take place on Wednesday, period 7 and the first half of period 8.

## Manually scheduling half periods



Half periods can also be scheduled manually using the timetable, the scheduling timetable or the scheduling dialogue.

1. Open the file *Demo4.gpn*
2. De-schedule all periods (via "Scheduling | Delete the Timetable" and change lesson 35 and 63 to half periods.

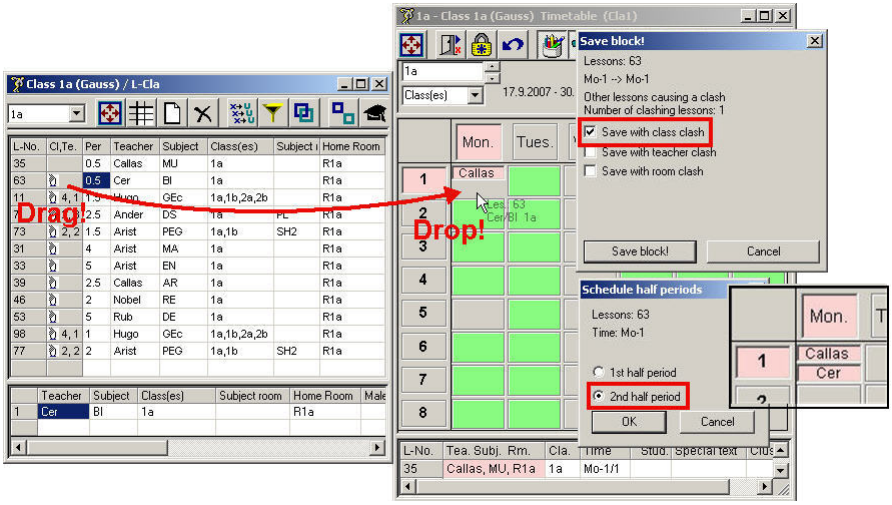
**Example**

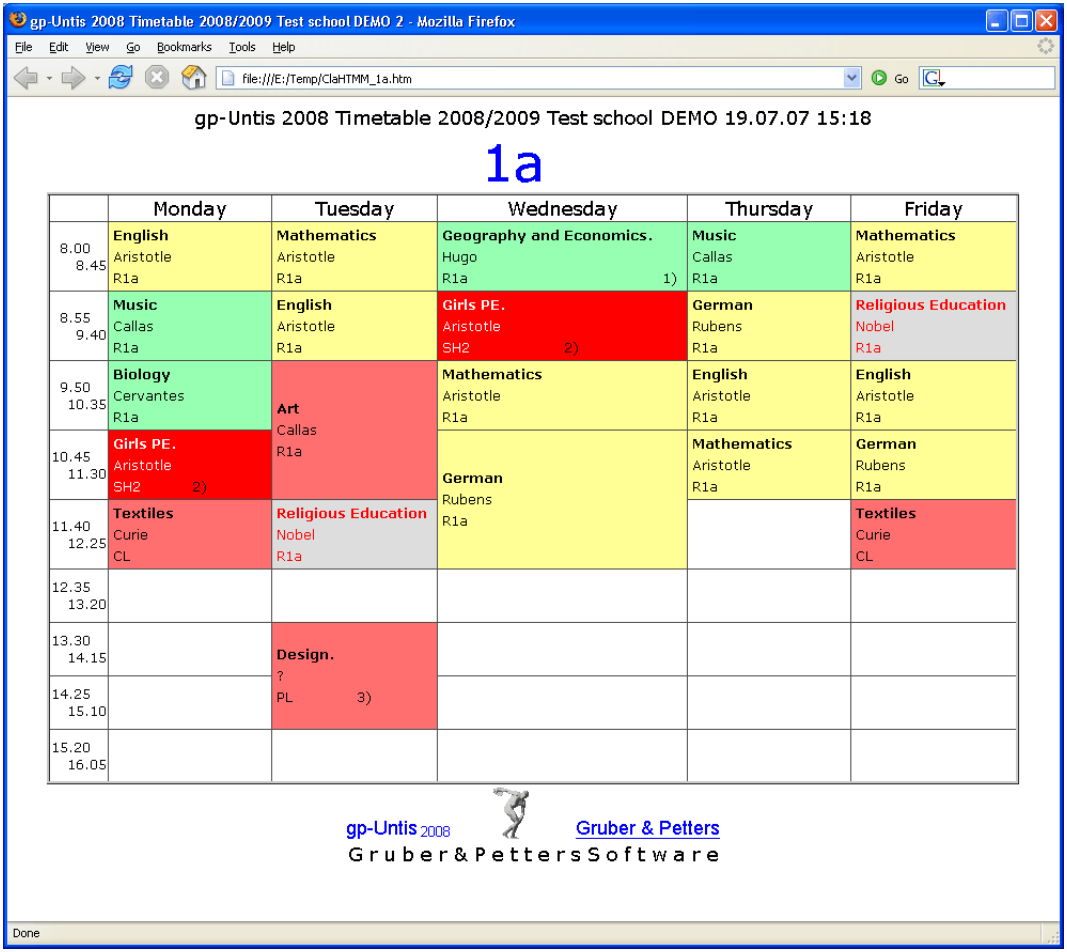
| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject | Home Room |
|---|---|---|---|---|---|---|---|
| 35 | | 0.5 | Callas | MU | 1a | | R1a |
| 63 | | 0.5 | Cer | Bl | 1a | | R1a |

3. Schedule lesson 35 via Drag&Drop on the timetable for the first half of Mon-1.
4. Schedule lesson 62 via a class clash for the same period Mon-1, but for the second half of the period (see example).

The two lessons 35 and 63 with a half period each are now scheduled to take place on Monday, period 1, starting with lesson 35.

You can also schedule half periods in the scheduling dialogue (via class clashes). See the chapter "Scheduling periods with clashes" on p.176.





gp-Untis 2008 Timetable 2008/2009 Test school DEMO 2 - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

file:///E:/Temp/ClaHTMM_1a.htm

gp-Untis 2008 Timetable 2008/2009 Test school DEMO 19.07.07 15:18

# 1a

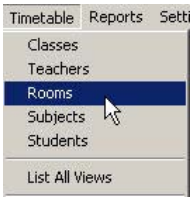
| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 8.00<br>8.45 | **English**<br>Aristotle<br>R1a | **Mathematics**<br>Aristotle<br>R1a | **Geography and Economics.**<br>Hugo<br>R1a 1) | **Music**<br>Callas<br>R1a | **Mathematics**<br>Aristotle<br>R1a |
| 8.55<br>9.40 | **Music**<br>Callas<br>R1a | **English**<br>Aristotle<br>R1a | **Girls PE.**<br>Aristotle<br>SH2 2) | **German**<br>Rubens<br>R1a | **Religious Education**<br>Nobel<br>R1a |
| 9.50<br>10.35 | **Biology**<br>Cervantes<br>R1a | **Art**<br>Callas<br>R1a | **Mathematics**<br>Aristotle<br>R1a | **English**<br>Aristotle<br>R1a | **English**<br>Aristotle<br>R1a |
| 10.45<br>11.30 | **Girls PE.**<br>Aristotle<br>SH2 2) | | **German**<br>Rubens<br>R1a | **Mathematics**<br>Aristotle<br>R1a | **German**<br>Rubens<br>R1a |
| 11.40<br>12.25 | **Textiles**<br>Curie<br>CL | **Religious Education**<br>Nobel<br>R1a | | | **Textiles**<br>Curie<br>CL |
| 12.35<br>13.20 | | | | | |
| 13.30<br>14.15 | | **Design.**<br>?<br>PL 3) | | | |
| 14.25<br>15.10 | | | | | |
| 15.20<br>16.05 | | | | | |

gp-Untis 2008 Gruber & Petters

Gruber&PettersSoftware

Done

# Timetable display




When the timetable is complete, the information needs to be presented in a clear and unambiguous fashion. gp-Untis offers a number of different timetable layouts and numerous timetable display options. The following chapter provides an overview of pre-constructed timetable displays and shows the different methods of shaping timetable layouts to suit individual requirements.

## Window set-up

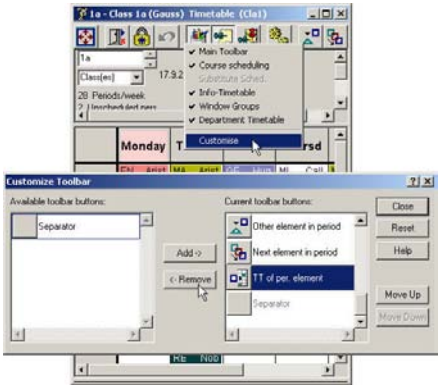
The menu item "Timetable"provides a number of pre-constructed timetables for classes, teachers, rooms and subjects (and students when using the *Student Timetable* or *Course Scheduling* modules).

Basically, a timetable window consists of the tool bar and three separate components – the selection window at the top, the actual timetable in the middle and the period details window at the bottom.



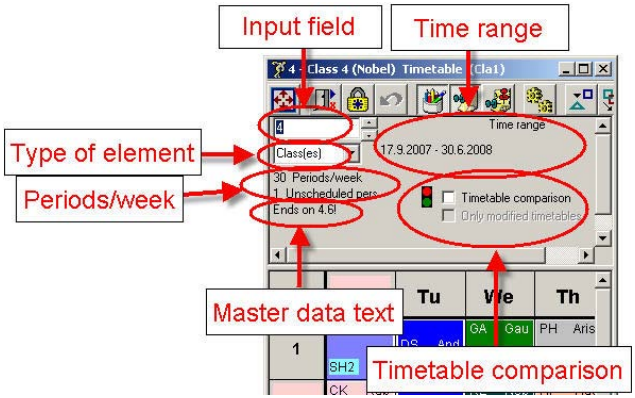

### The tool bar

The tool bar is usually located at the top of the window, but can be moved to any window edge – right, left or bottom – and can even be dragged out of the window altogether. You can also remove unwanted buttons from the tool bar ("Customise" via right mouse click) (see example). The following chapters provide a detailed description of the tool bar functions.



## Selection window

The selection window in the upper part of the timetable window allows you to select the type of timetable you want to display. The window also provides additional information such as the number of periods per week and the unscheduled periods.

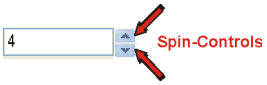






### Type of element

Element types (class, teacher, room etc.) can be changed via a dedicated drop down list.




### Input field

Use the input field to enter the name of the element whose timetable you want to display. Switch between different elements by using the spin controls located on the right window edge or by placing the cursor in the input field and pressing the <Page Up> and <Page Down> keys or the up and down cursor keys.

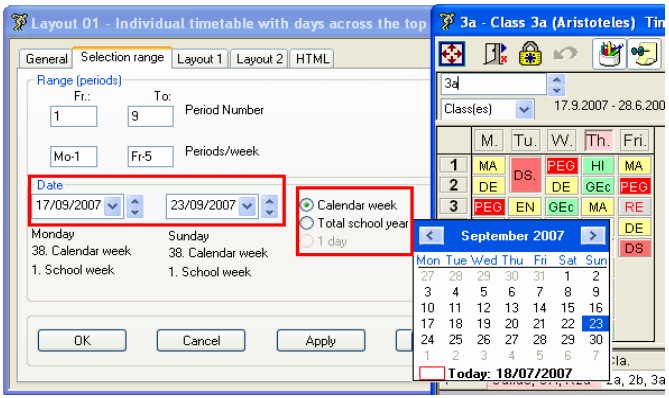
### Date range

**Timetable-Settings**

Specify the date range for the timetable by selecting the desired range on the "Selection range" tab under <Timetable Settings>. You have a choice between calendar week, total school year and any specific date range you have entered (see the following example). When selecting "Calendar week", a date range window appears where you can specify which week you want to display.

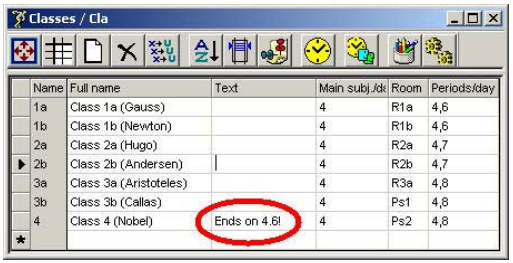
### Timetable comparison

The two selection boxes "Timetable comparison" and "Only modified timetables" are for use with the "Timetable comparison" function described in greater detail in the chapter "Timetable comparison" on p.301.




### Master data text

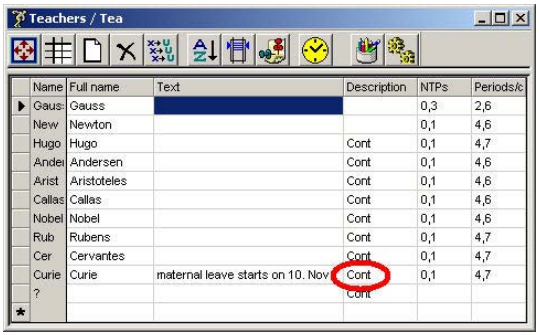
Displays the text entered under "Text" in the master data of the displayed element.




### Description

Displays the description entered for teachers under "Master Data | Descriptions" in the details window of the timetable.

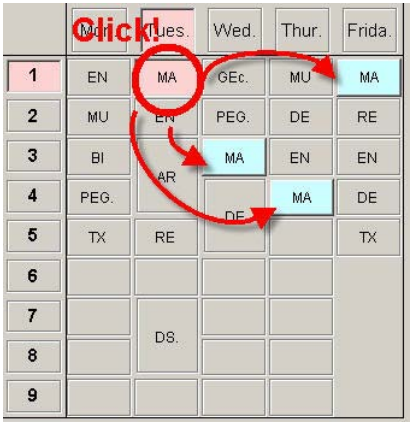





### Periods per week

Displays the number of periods per week and the number of unscheduled periods (per week) for the active element.




## Timetable window

The middle part of the timetable window shows the actual timetable for the active element. The display offers a variety of different settings and options that allow you to customise the display to suit your individual requirements. Please see a detailed description of these settings in the chapter "User-defined views" on p. 219.

Clicking on a (scheduled) period on the timetable activates the period and causes the cell to be highlighted in pink. All other periods connected with the active lesson are highlighted blue (see example), showing you at one glance how the periods of this lesson are distributed throughout the week. Use the cursor keys or the <Page Up> and <Page Down> keys to navigate within the timetable.

Use the following tool bar buttons to modify the timetable display:

**Resize the window**

### Resizing the window

This function adjusts the window frame to the size of the displayed timetable window.

**Other element in period**

### Other element in (timetable) period

Use this function to switch to another element in the timetable window (in the order classes - teachers – rooms - subjects).

### Next element in (timetable) period

Use this function to display the next element of a coupled lesson on the timetable.

**Next element in period**

### Period timetable

This button can be used to call up the timetable of the element currently displayed in the active period of the timetable.

**TT of per. element**

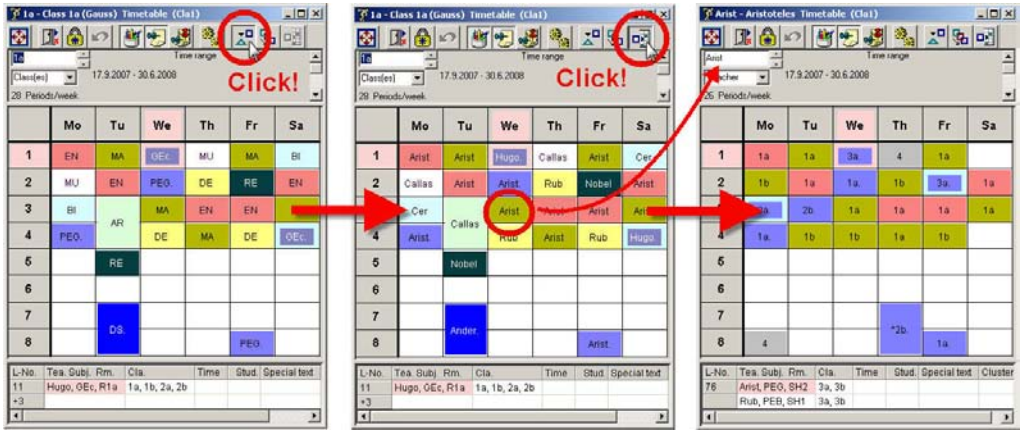
**Example**

- Open the file *demo.gpn*.
- Activate the class timetable of class 1a.
- Click on <Next element in period>. Instead of the originally displayed subjects, the display now shows the teachers on the timetable.

**Next element in period**

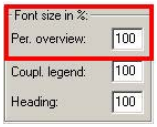
- Activate period 3 on Wednesday (Arist, MA, R1a). The active period now shows the teacher Arist.
- Click on <TT of per. element> to call up the timetable of teacher Arist.

**TT of per. element**

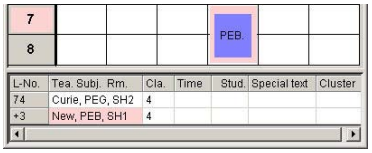


## Period details window

**Timetable-Settings**




Since there is often not enough space in the individual cells of the timetable to display all the relevant data for the active period, gp-Untis provides a third window for the display of such information – the period details window. The font used in the period details window can be changed via <Timetable Settings>. The period details window provides the following lesson details:




### L-No.

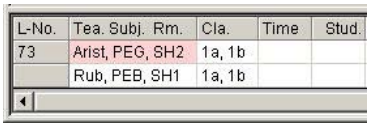
The example in the column "L-No." shows lesson number 74. Below the lesson number, you will see the time request entered for the active period under "Master Data | Classes" ("+3").




### Tea. Subj. Rm.

The second column shows the teachers, subjects and rooms involved in the lesson. The period details window displays one row per individual coupling.

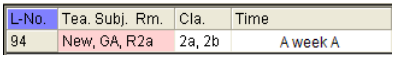
If the optimisation tool has allocated a different (alternative) room instead of the home room entered for the lesson, the name of the home room is shown in brackets. The example shows that room Ps1 is the designated home room for the lesson, but the actual scheduled room is the alternative room R1a.




### Classes

The column displays the class(es) involved in the active lesson (classes 1a and 1b in the example).

### Time




The "Time" column displays time restrictions and/or periodicities – a particularly important function for use with the *Multi-Week Timetable* module. For instance, the GA lesson in the example takes place on a fortnightly basis in weeks of type A.

### Students

Shows the number of students entered for the lesson or elective subject (for use with the *Course Scheduling* module). Lesson 6 on the demo file *demo.gpn*, for instance, shows the number of students in the individual remedial courses (see example on the right).

| L-No. | Tea. Subj. Rm. | Cla. | Time | Stud. | Special text |
|---|---|---|---|---|---|
| 6* | Callas, CH, R2a | 2a, 2b, 3a | | 9 | Special Class |
| | Gauss, MA, R2b | 2a, 2b, 3a | | 11 | |
| | Ander, MA, R3a | 2a, 2b, 3a | | 9 | |
| | Rub, EN, R1a (Ps1) | 2a, 2b, 3a | | 6 | |
| | Hugo, EN, R1a (Ps1) | 2a, 2b, 3a | | 12 | |
| | Nobel, DE, (Ps2) | 2a, 2b, 3a | | 7 | |
| | ?-1, DE | 2a, 2b, 3a | | 8 | |
| | | | Total | 62 | |

### Special text

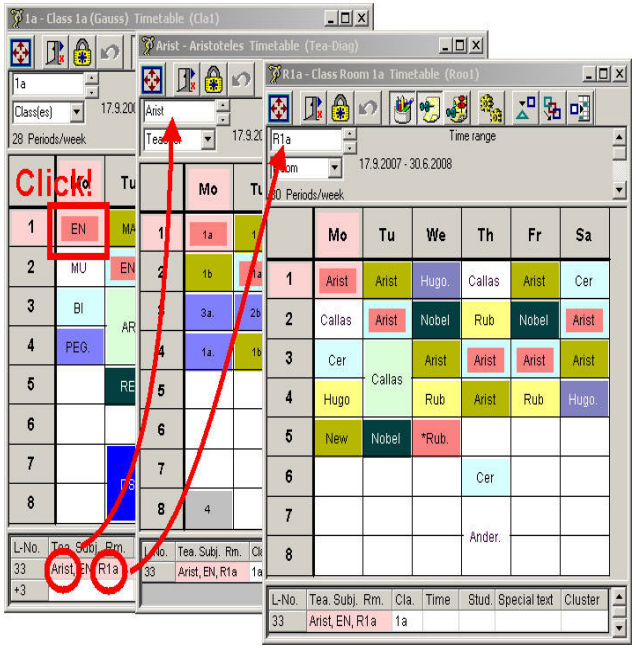
The column "Special text" contains the text or the description entered for the lesson, and the text entered in the lesson details window. Lesson 6 on the demo file *demo.gpn*, for instance, contains the description "Special Class" (see example above).

## Timetable interaction

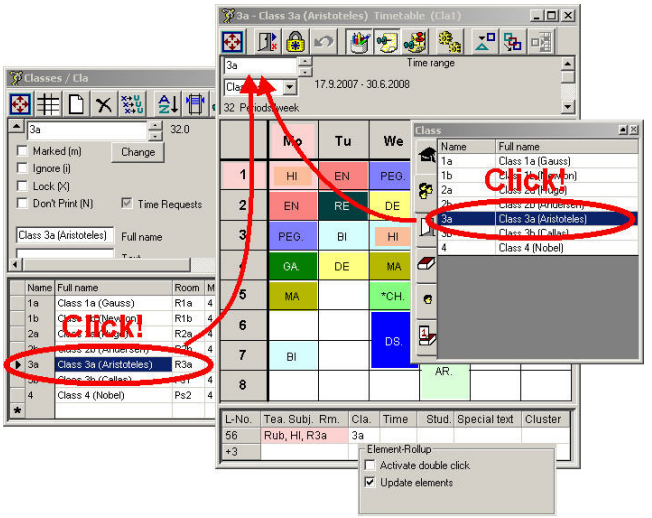
Timetables can be called up manually or set to open automatically (if desired) when an element is selected in a different window. The automated function means that you will always have up-to-date information on the screen without having to search for it.

### Communication between timetables

Open the file *demo.gpn* and call up a timetable for classes, teachers and rooms, and arrange the timetables next to each other. Click on Monday, period 1 ("EN") on the timetable of class 1a. As you can see, the teacher timetable automatically switches to the timetable of the teacher involved in the lesson (i.e. Aristotle "Arist") and the room timetable switches to the room allocated to this lesson ("R1a").



Clicking on the coupling row in the period details window synchronizes all other open timetables of the same element.




### Communication with other windows

Open a class timetable and the master data window for classes. Click on a class in the master data window and you will see that the timetable automatically switches to the timetable of that class.

The same occurs when you switch elements in a lesson window or in the element-rollup ("Customise" under "Settings | Miscellaneous").

### Locking timetable types


**Lock Type**

In the previous examples, the type of timetable was always locked. Open the file *demo.gpn*. Open a teacher timetable and the window "All Elements". In the master data view, click on one teacher after another. The timetable window always shows the timetable of the currently selected teacher. Clicking on a class name, however, has no effect on the timetable view, i.e. the type of timetable – here the teacher timetable – remains unchanged.

### Unlocked timetables



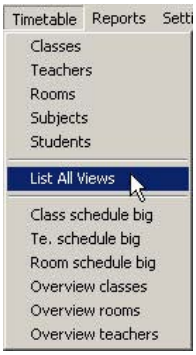
Deactivate the type locking function by clicking on <Lock Type>. Switch between teachers, classes and rooms in the "All Elements" window. You will see that the timetable always displays the active element, irrespective of the type of element (classes, teachers, rooms or subjects). The displayed element changes, as does the type of displayed element.

### Locking elements




Lock the timetable of a selected element – for instance a specific teacher – on the screen by "pinning" it to the screen using the <Lock Timetable> button. When a timetable is locked with two pins, the displayed element cannot be changed.

## Timetable Layouts




gp-Untis offers over 80 different predefined timetable layouts. The layouts are accessible via the menu item "Timetable | List All Views".

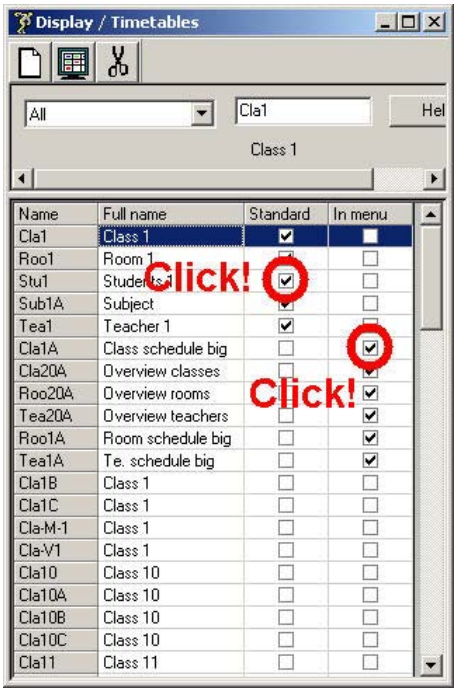
### Show the TT




Each timetable layout has a descriptive full and abbreviated name. Click on <Show the TT > or double click on the full name of a layout to open the timetable.

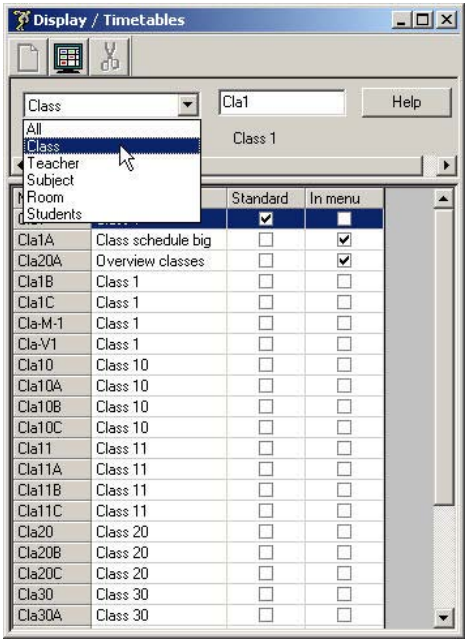
### Standard layout

Select the desired standard layout, i.e. the layout that will be used when you select a timetable from the "Timetable" menu, by ticking the relevant "Standard" box on the list of timetable layouts in the "Display / Timetables" window (see figure on the right).




### Timetables in the menu

In addition, you can specify which timetables you want to include in the menu, i.e. which timetables you want to have immediately available (see figure on the right). Per default setting, timetables labelled "big" and "overview" are automatically included in the menu (see figure on the top right).




## Predefined layouts

Per default, the "Timetable | List All Views" list displays the predefined layouts for all the different types of timetable. If preferred, you can limit the view to individual elements (class, teachers etc.).

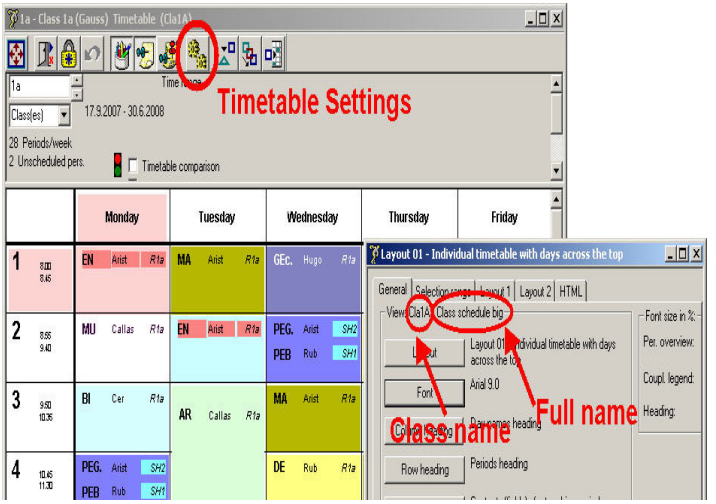
The names of the predefined layouts obey the following rules:

**Key words** e.g. **Cla**1A

Timetable designations containing the key word "Cla" are class timetables, "Roo" are room timetables, "Tea" teacher timetables, "Sub" subject timetables and "Stu" are student timetables.

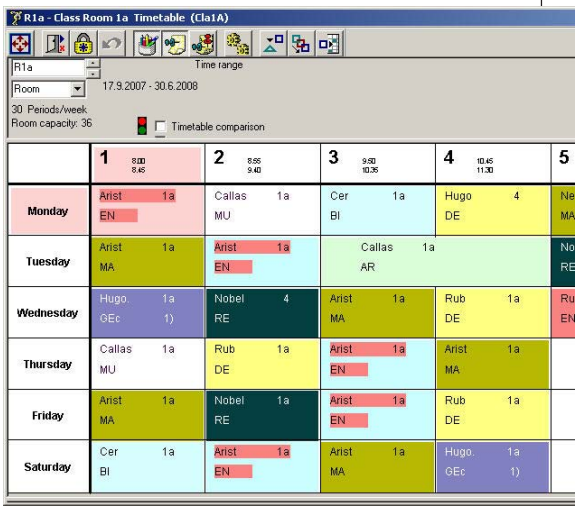
**Layout details** e.g. Cla**1**A

Layout 1: This layout displays the days of the week in columns and the periods of the day in rows (see figure). The sub layout detail, e.g. Cla1**A**, indicates that the layout is a variant of the master format. The full name of this timetable layout is "Class schedule big". The layout is included in the menu per default.

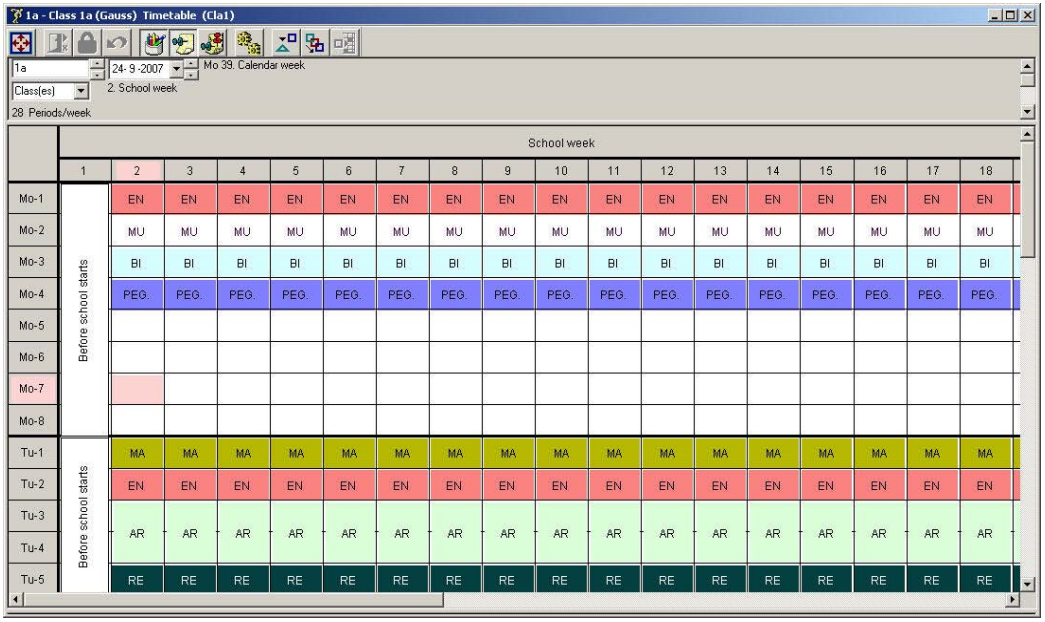



The name of the layout can also be found on the "General" tab under <Timetable Settings>.

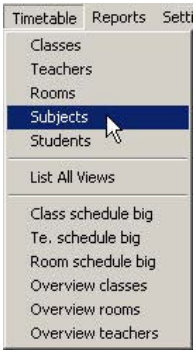
Layout 10: This layout displays the days of the weeks in rows and the periods of the day in columns. The example on the right shows a room timetable with layout "Roo10B".




Layout 11: This layout is important for use with the *Multi-Week Timetable* module. It shows the individual weeks of the school year in columns and the periods of the week in rows and provides a clear display of two-weekly alternating lessons and lesson interruptions.

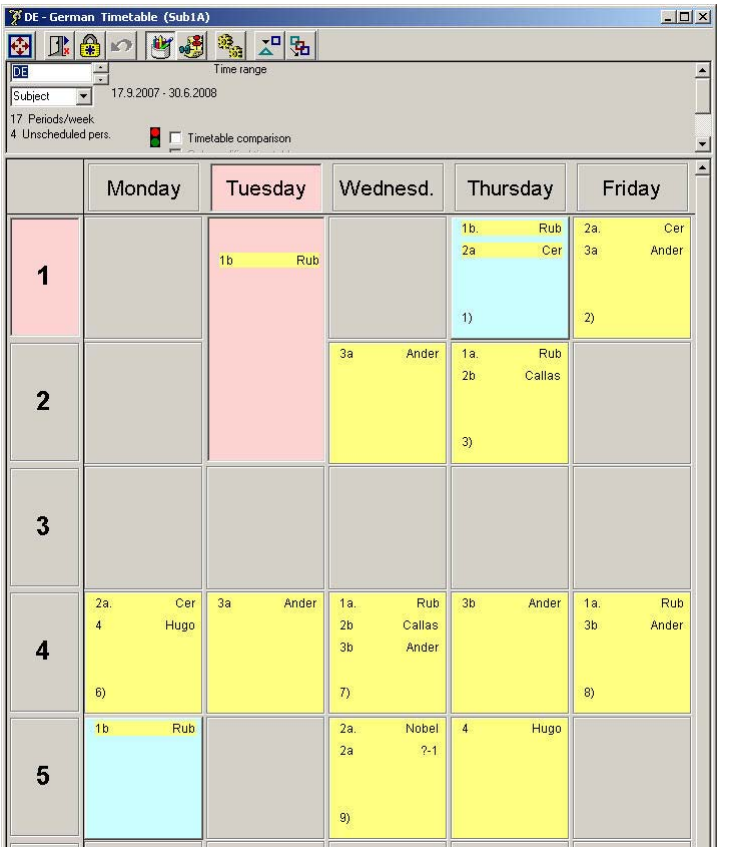


The example on the previous page shows the timetable of class 1a for Mondays and Tuesdays of school weeks 1 to 19. The PE lesson on Monday is a 2-weekly lesson while DS and GA alternate on Tuesdays. No lessons take place in weeks 8, 15, and 16 due to the October break and the Christmas holidays.

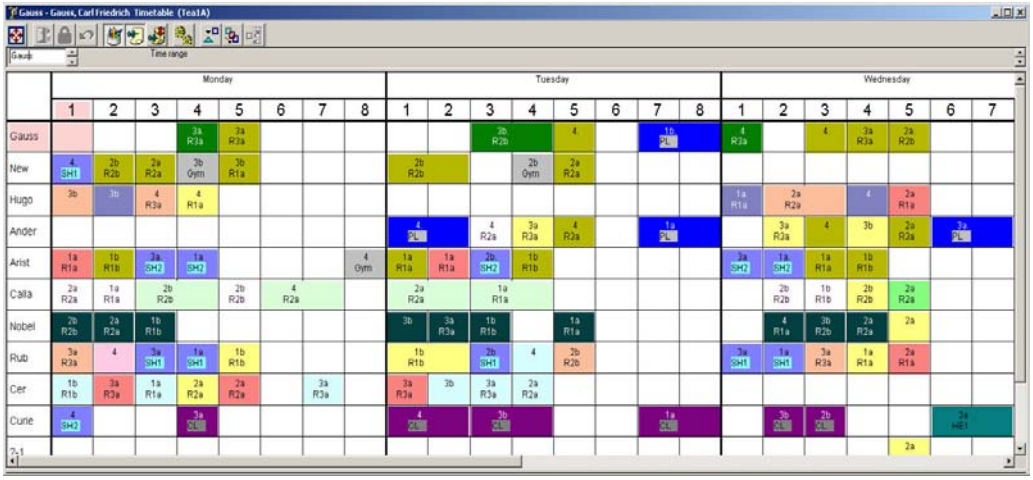



## Subject timetable

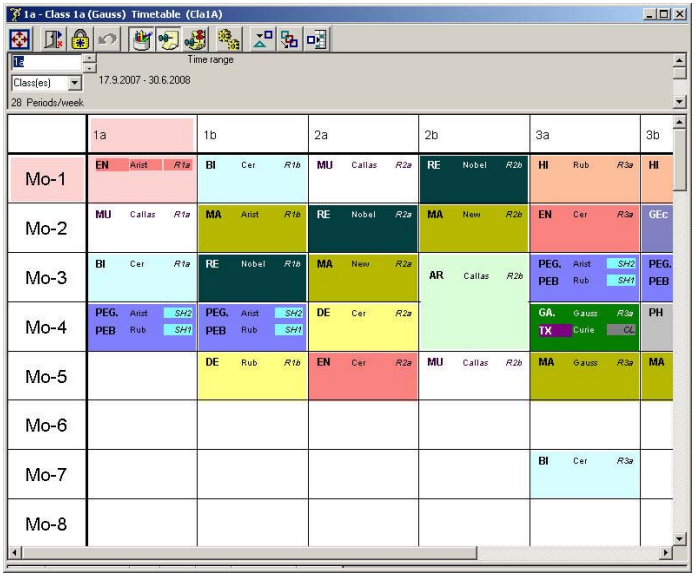
The layout of the subject timetable is identical to that of a class, teacher or room timetable. Subject timetables display all the periods of the selected subject. The available layouts are layouts 1, 10 and 11. The example shows a subject timetable for German.



Layout 20: This layout provides a week's overview of all the teachers (classes, rooms) in the school (arranged in rows) and periods (arranged in columns).




Layout 30: This layout also provides a week's overview of all elements. In contrast to layout 20, the elements are arranged in columns and the periods in rows.

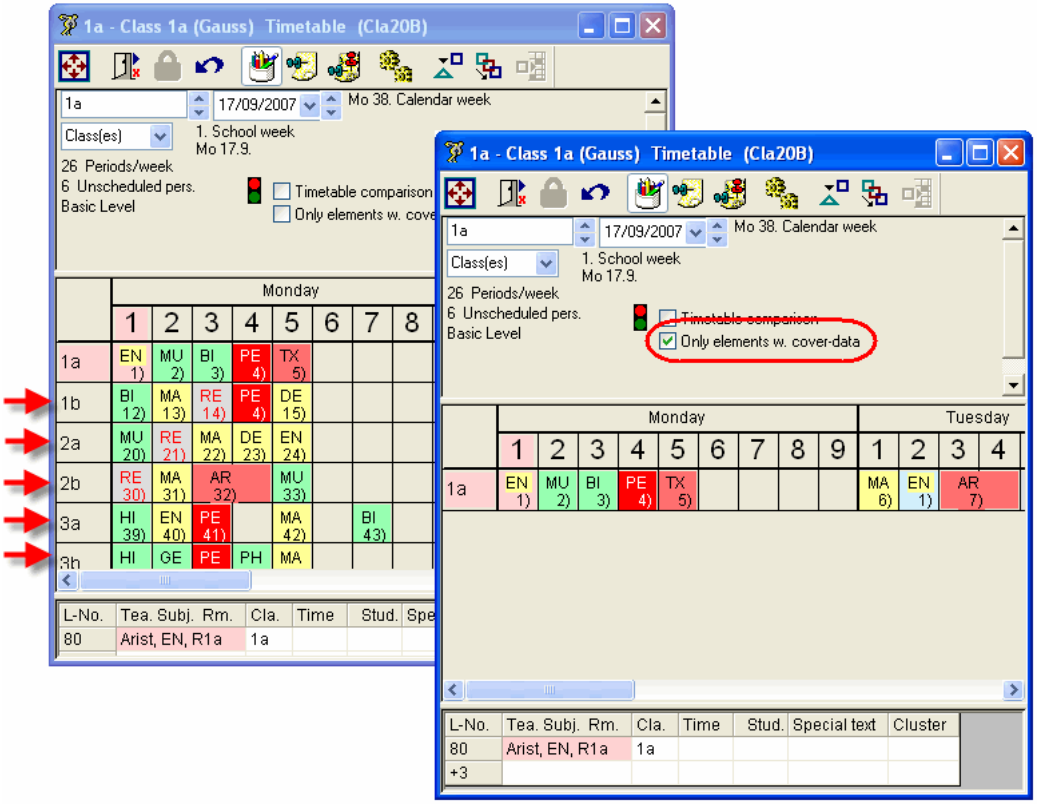


Layout 40: This overview is similar to layout 30, however instead of displaying the different days of the week underneath each other, they are being shown next to each other.

Overview timetables of modified periods (layouts 20/30)

The overview timetables of modified periods offer one possible method for displaying cover data. In *Cover Planning* mode, tick the box "Only elements with w. cover data" for a timetable with layout 20 or 30 to display only the timetables of those elements where cover data has been entered for the selected date range (see also the section "Layout 2" on p.230).

The example shows no modifications on the regular timetable for classes 2a, 2b and 3b for the week starting 11.9.



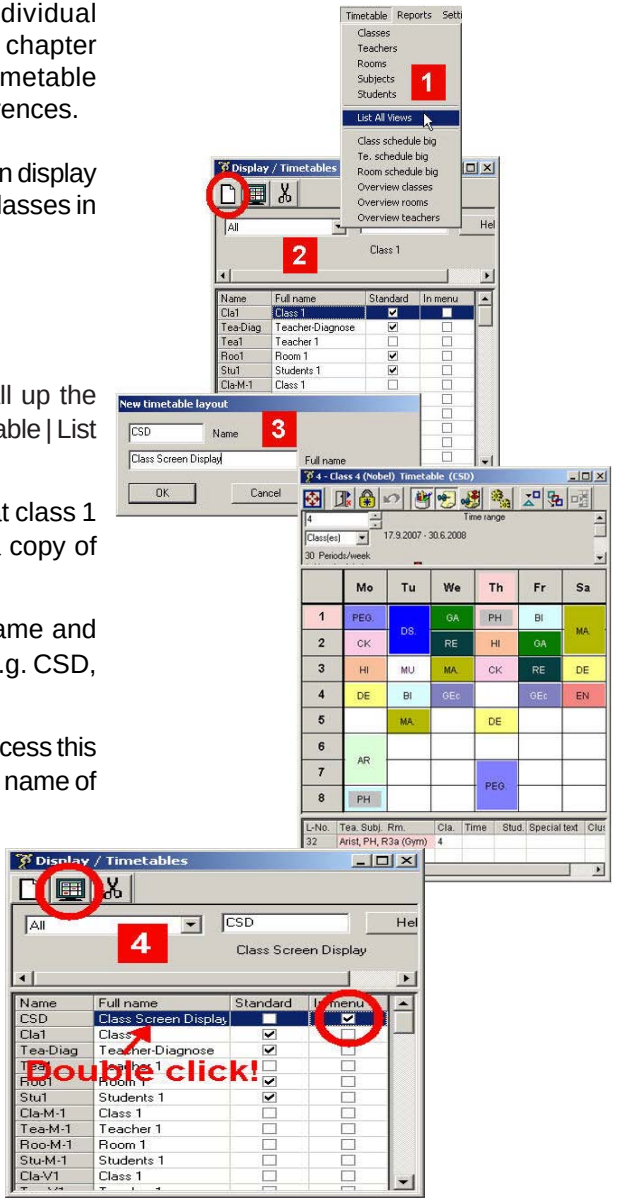
# User-defined views

Timetable views in gp-Untis can be customized quickly and easily to meet the individual requirements of your school. This chapter describes how to customise the timetable display to reflect your personal preferences.

You want to create a customized screen display based on the standard timetable for classes in the *demo.gpn* file.

## New timetable view

1. Open the file *demo.gpn* and call up the timetable overview under ("Timetable | List All Views").
2. Click on the first timetable format class 1 and click on <New> to create a copy of this timetable view.
3. Assign a new descriptive full name and abbreviated name to the view (e.g. CSD, Class Screen Display).
4. A new timetable view appears. Access this view by double clicking on the full name of the view or by clicking on <Show the TT>. Place a tick in the column "In menu" to include the view in the menu.



## Timetable period window

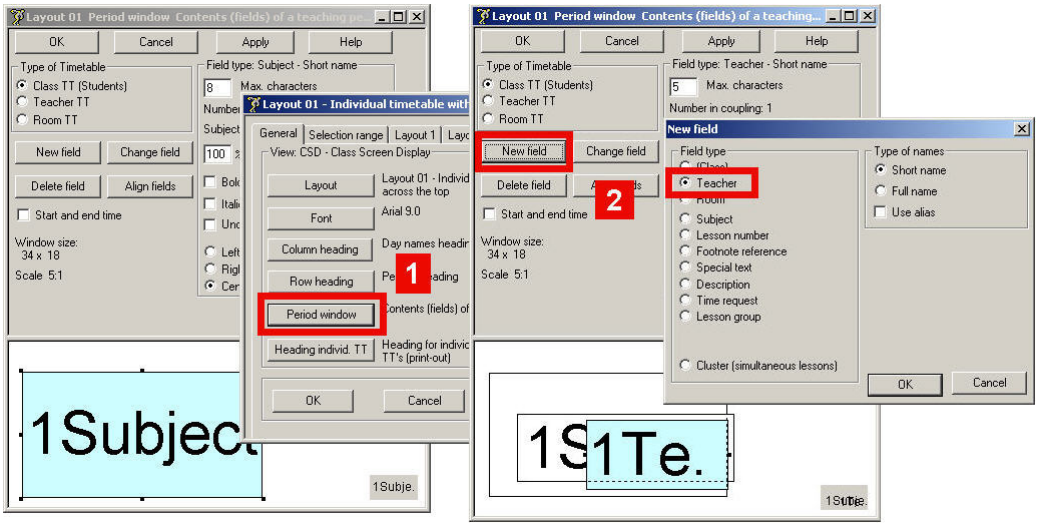
The next steps describe how to modify the contents of the period window (timetable period).

### Several fields in the timetable period window

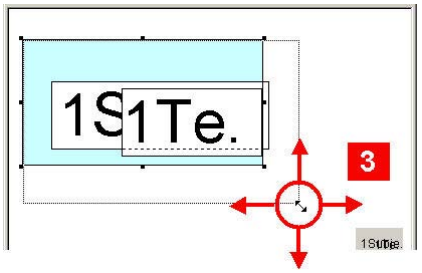
**Timetable-Settings**

1. In the new timetable view (or under "Timetable | Classes" in the file *demo.gpn*), click on <Timetable Settings> and select "Period window". This will open the graphics editor that can be used to modify the contents of the timetable period window. At present, only the subject is displayed in the period.

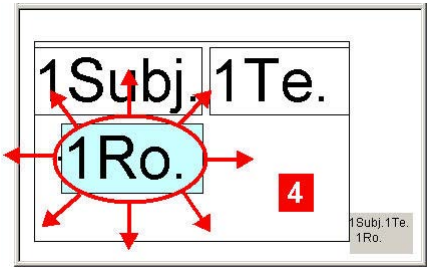
2. In addition to the subject, you want to display the teacher and the room of the lesson. Click on <New field>. In the selection block "Field type", select "Teacher" and click on <OK>. Repeat the same process for the room.



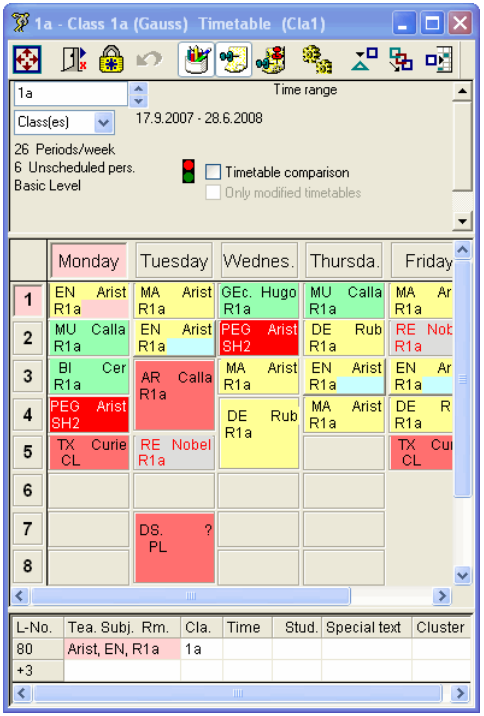
❸ The next task is to arrange the three fields for subject, teacher and room next to each other in such a way that they are easy to read. First, enlarge the period window by clicking on it (the background will turn blue) and dragging the edges until it has the desired size.




❹ Arrange the three fields as shown in the example. Click on the field you want to move. When the field is blue, the cursor changes to a cross, allowing you to move the field with the cursor. When all three fields have been arranged to your satisfaction, click on <Align fields> then on <OK> .




❺ The timetable now displays the subject, teacher and room for each period:

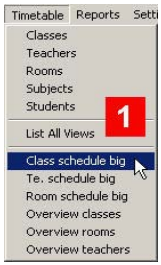


## Coupled lessons

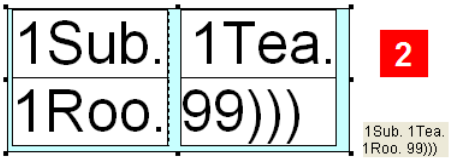
If you also want to display the details of lesson couplings, proceed as follows:

**Timetable-Settings**

1. Open the file *demo.gpn* and the timetable "Class schedule big" ("Timetable | Class schedule big").




2. Open the timetable period editing window ("Timetable Settings | Period window"). Per default, the large class timetable displays four fields, one each for subject, teacher, room and the "Footnote reference".

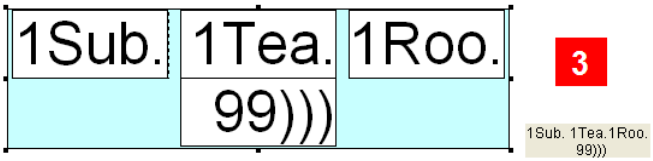



Footnote reference

It is not always possible to display all the details of a coupled lesson with many elements in the timetable period since this would take up too much space on the screen and the printout (see, for example, lesson 11 on Wednesday, period 1, of class 1a). Instead, the details can be displayed in a legend in a footnote (see also the chapter "Print | Coupling legend" on p.244).

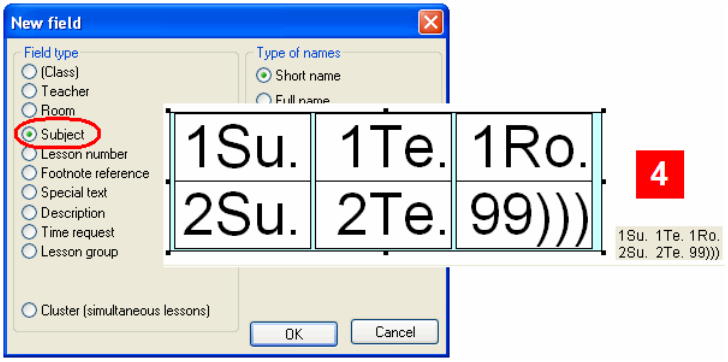
You want to modify the large class timetable to include the second coupling row.

3. First, enlarge the period window by clicking on it (the background will turn blue) and dragging it to the desired size. Arrange the



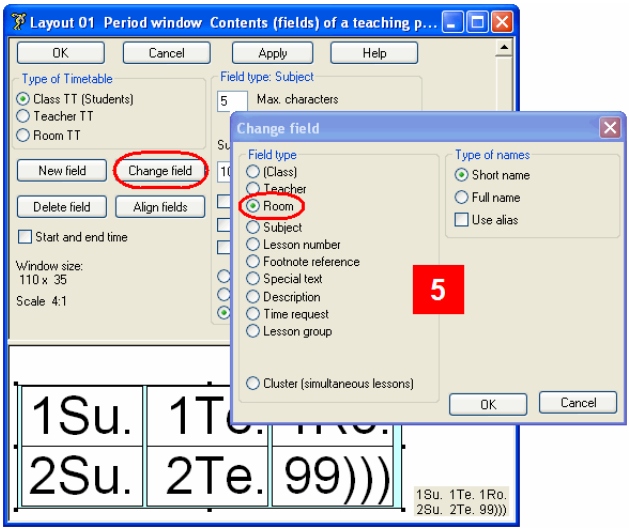
subject, teacher and room fields next to each other.

4. Insert two new fields (one for subject and one for teacher) and

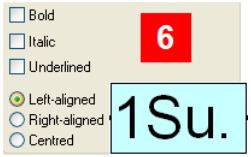



arrange them below the other subject and teacher fields.

5. Click on "Footnote reference" and click on <Change field>.

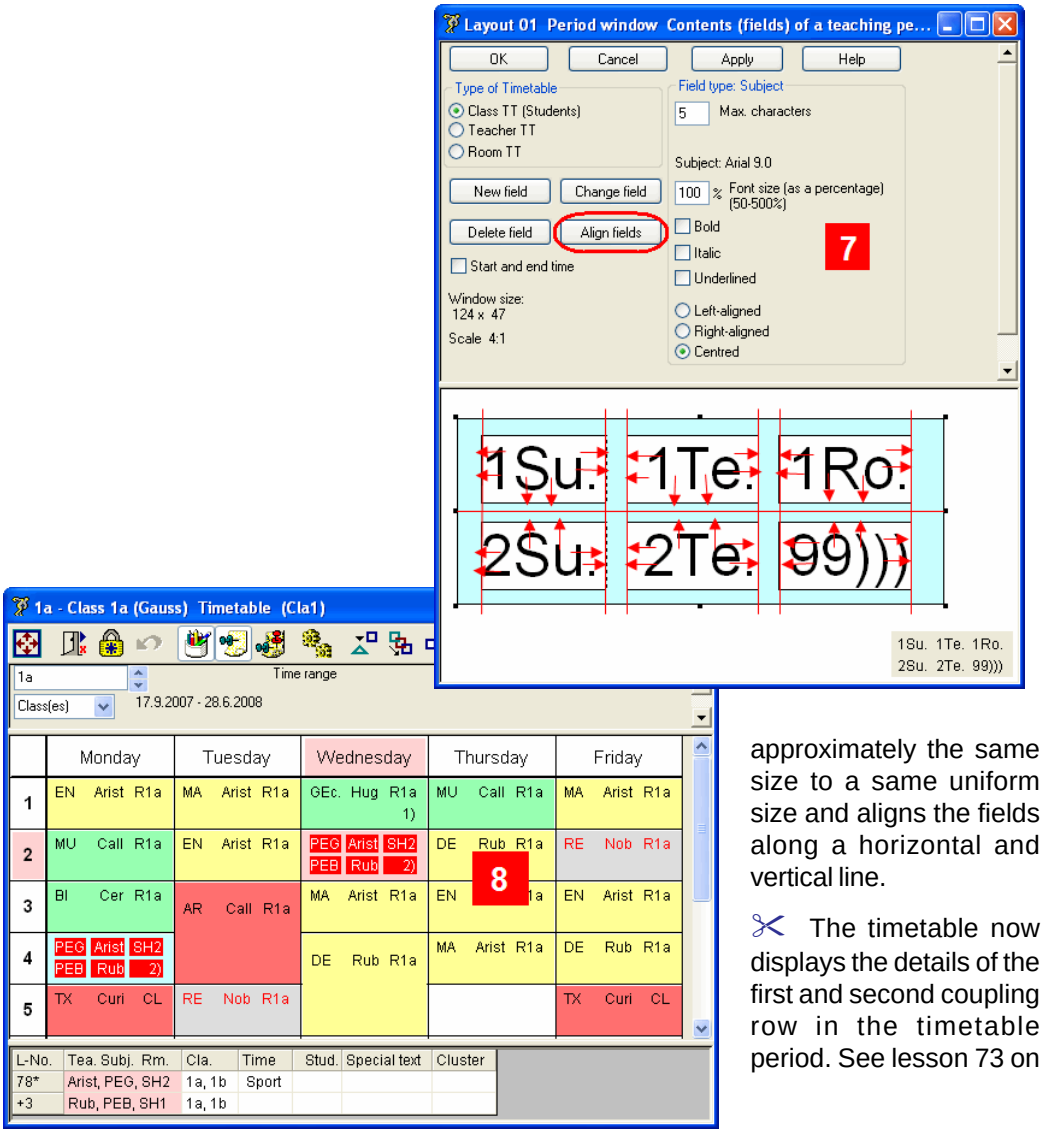



Select the field type "Room" and click on <OK>.



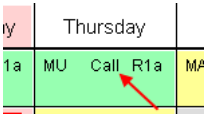
6. Align the text in the fields on the left.

7. When the field has approximately the right size and position, click on <Align Fields>. This function re-sizes all the fields of approximately the same size to a same uniform size and aligns the fields along a horizontal and vertical line.



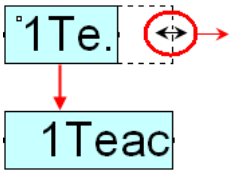

✂ The timetable now displays the details of the first and second coupling row in the timetable period. See lesson 73 on

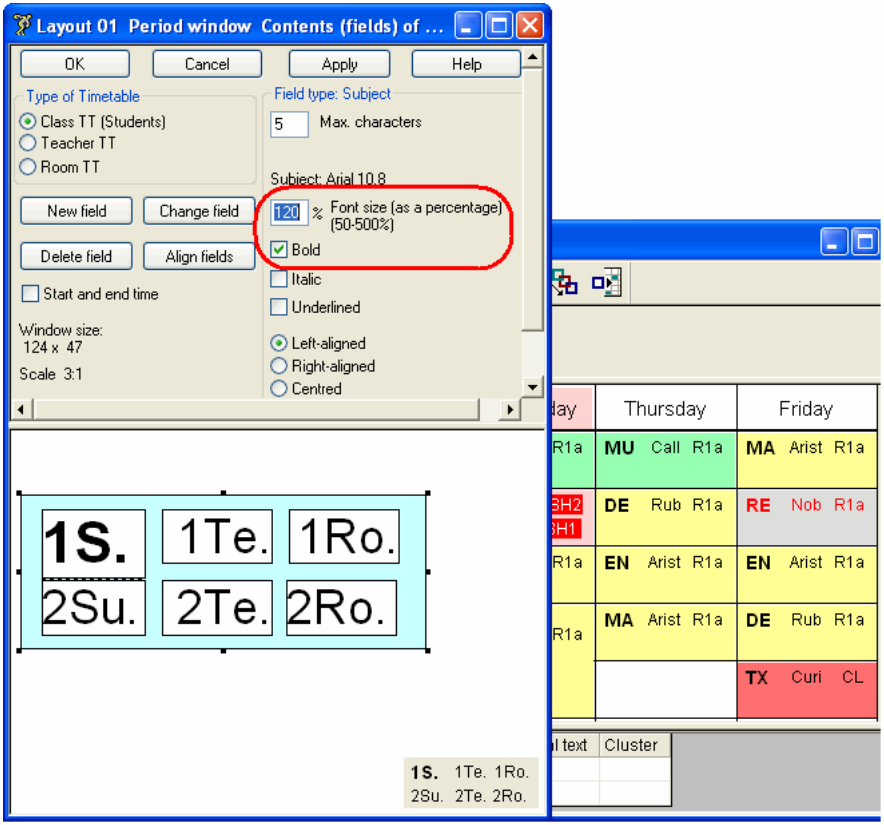
Monday, period 4, class 1a. Click on <Resize the window> to adjust the window automatically to the new size.




### Layout field

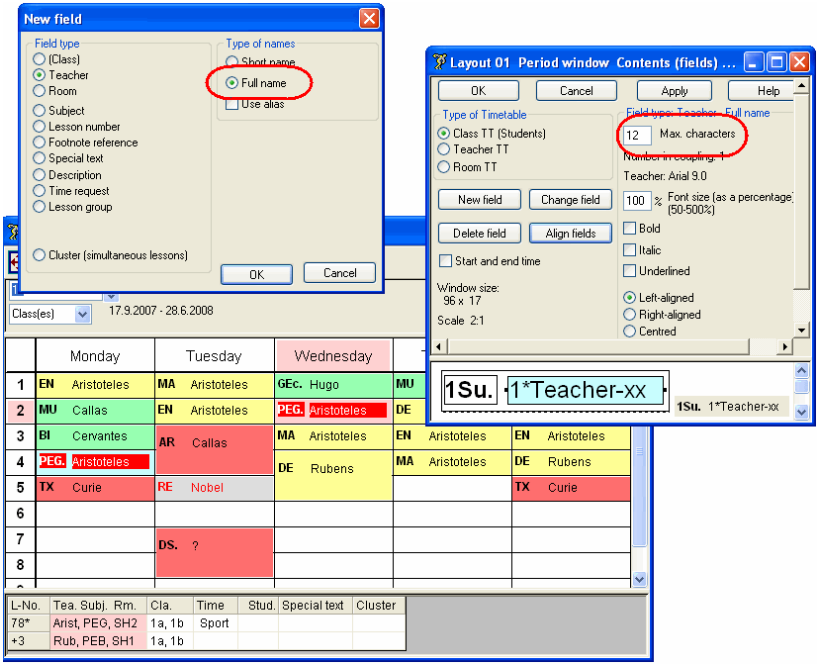
If a field is too short to display the entire name (e.g. Callas Thursday, period 1), resize the field by clicking on a button on the edge of the field and dragging it to the desired size. You can also change the font size for each separate field. The example shows how to change the font type of the subject to bold and the font size to 120% of the preset value (Arial 9).



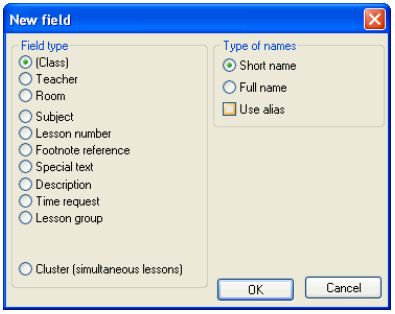



### Full name

Alternatively, you can display the full name or the alias name defined under master data. The example shows how the full name of the teacher (12 character max.) can be displayed.




In addition to the class, teacher, room, subject and footnote reference fields, the following additional information can be displayed in the period window of a timetable.

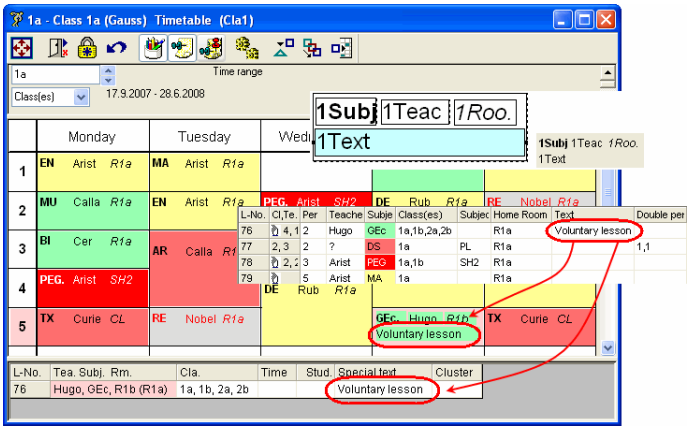



### Lesson number

Displays the unique lesson number as an additional item of information in the timetable.

### Special text

Displays the text entered for the lesson or the row text entered in the lesson details window.




### Description

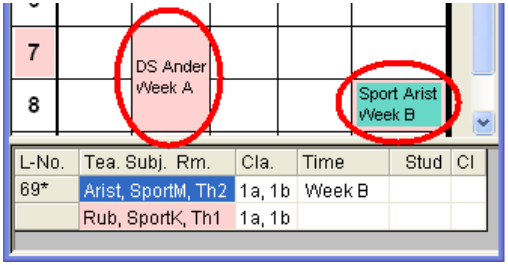
Displays the description entered for the lesson.

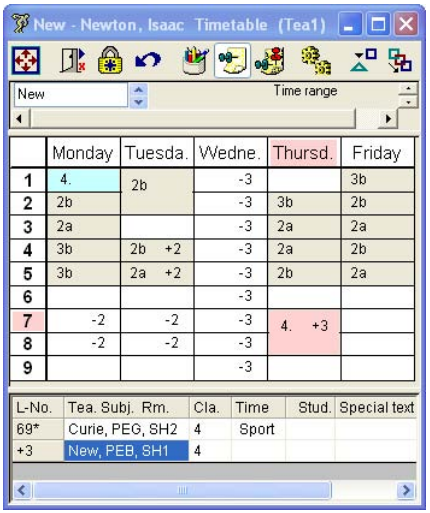
### Time request

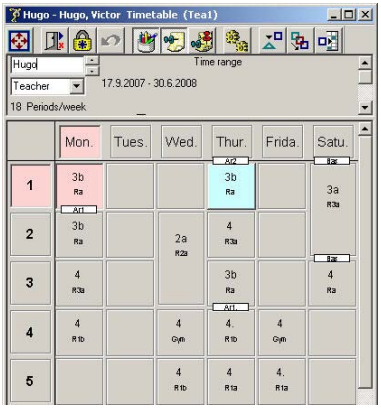
Displays the time requests entered under the element's master data. The example shows the time requests entered for teacher Newton.

### Lesson group

Displays the lesson group assigned to the lesson (for use with the *Multi-Week Timetable* module). The example shows the DS lesson in weeks of type A and the PE lesson in weeks of type B.






## Break supervision

Displays the break supervision on teacher timetables (for use with the *Break Supervision* module). The example shows a teacher timetable from the file *demo6.gpn*.

## Number of students

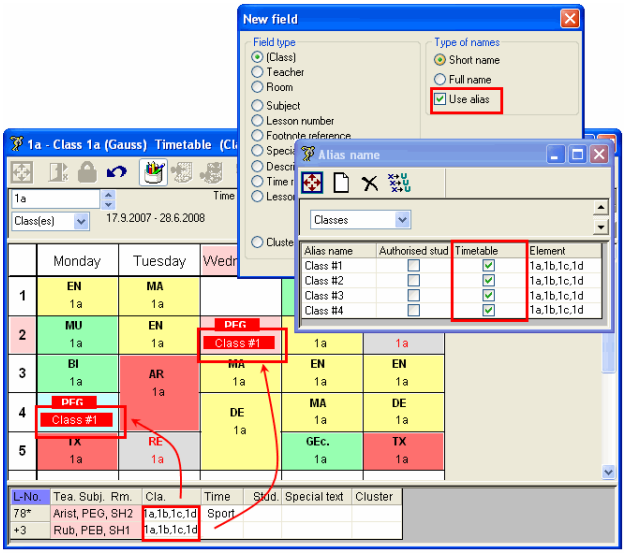
Displays the number of students entered for a lesson or elective subject on teacher timetables (for use with the *Student Timetable* module).

## Cluster (simultaneous lessons)

Displays the name of the cluster (simultaneous lesson groups/bands) on the timetable (for use with the *Course Scheduling* module).

## Alias (alternative name)

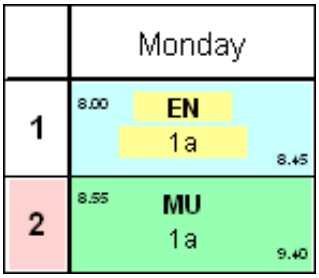
If you want to display a name on the timetable and the printout other than the usual name, define an alias name for subjects, classes or teachers under "Master Data | Alias Names" To display the alias on the timetable, tick the box "Timetable" in the "Alias" window and the box "Use alias" in the timetable period (see example).




You can also define one alias name for several classes, for instance to show that one teacher teaches all the first year classes. The classes 1a, 1b, 1c, 1d, 1e and 1f can be combined into the one name "Year 1" (see example).

### Start and end time

Activating this option will display two additional fields in the timetable period that show the times of the start and the end of lessons. The fields can be moved and resized as usual.

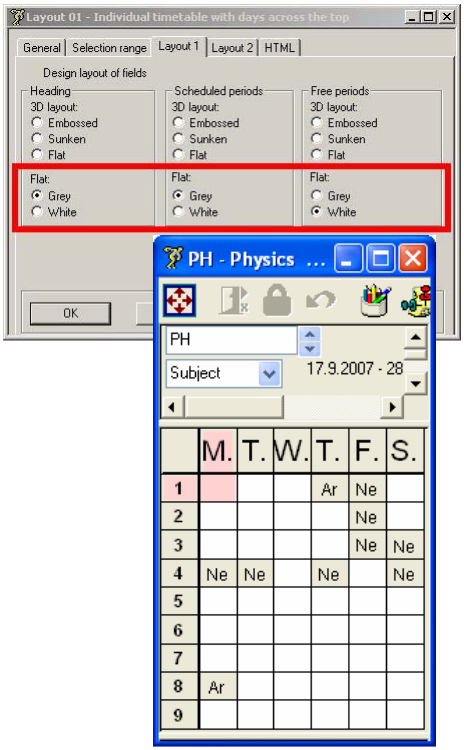



In addition to the editing options in the timetable period, the software offers a number of additional functions that can be used to customise screen displays and printouts.

## Layout 1

The settings on the "Layout 1" tab under <Timetable Settings> can be used to change the timetable display on the screen and the printout. The settings offer options for customizing the layout of headings (e.g. week day, period number), scheduled periods and free periods.

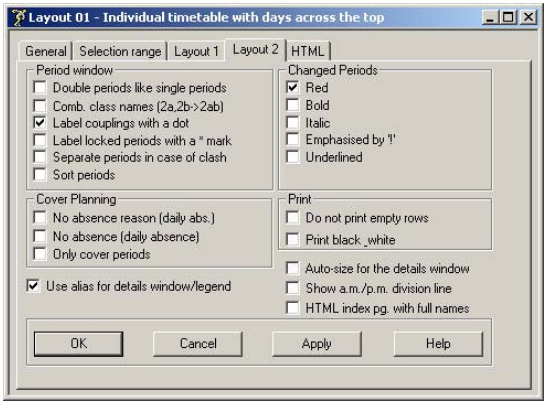
The different options for 3D settings only affect the printout of the timetable (see the chapter "Print / Layout" on p.240). The only option available for the screen display is the choice between 3D and flat display. The colour choice "Grey" and "White" under "Flat" affects the screen and the print display. The example shows the room availability of the Physics lab (format Roo-V1 in the file *demo.gpn*). The headings and the scheduled periods are shaded grey, free periods are white.



## Layout 2

**Timetable-Settings**

The settings on the "Layout 2" tab partly affect both the screen and the print layout, partly only the print layout or the HTML output.




### Double periods like single periods

Double periods are displayed like single periods.

### Comb. class names (2a,2b → 2ab)

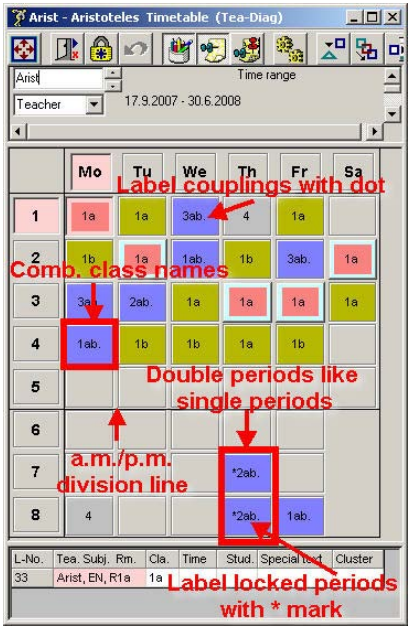
On teacher timetables, it is often desirable to be able to see all the classes the teacher teaches. Combined class names can be used to show all the classes in a single cell.

### Label couplings with dot

Coupled lessons are marked with a dot in the period window.

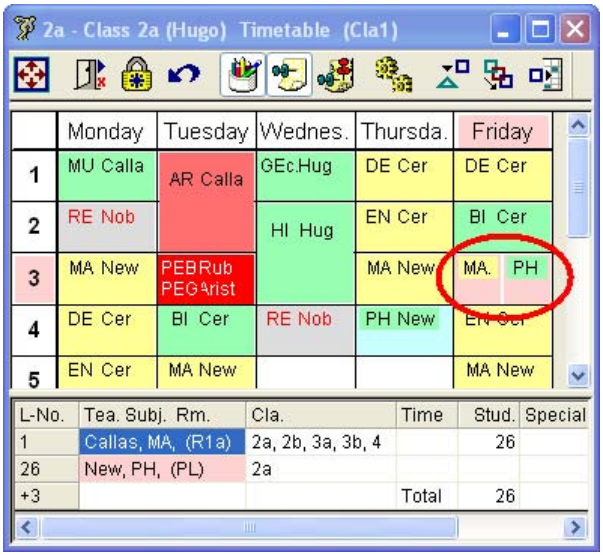
### Label locked periods with a * mark

Manually locked periods are marked with an asterisk (*).



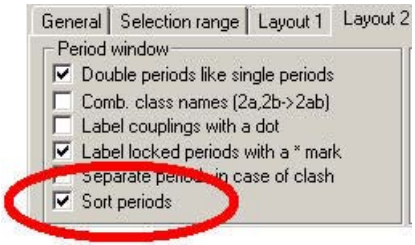
### Separate periods in case of clash

Use this option to display conflicting periods (see "Manual Timetabling" on p.152) in separate cells on the screen, the printout and the HTML output.



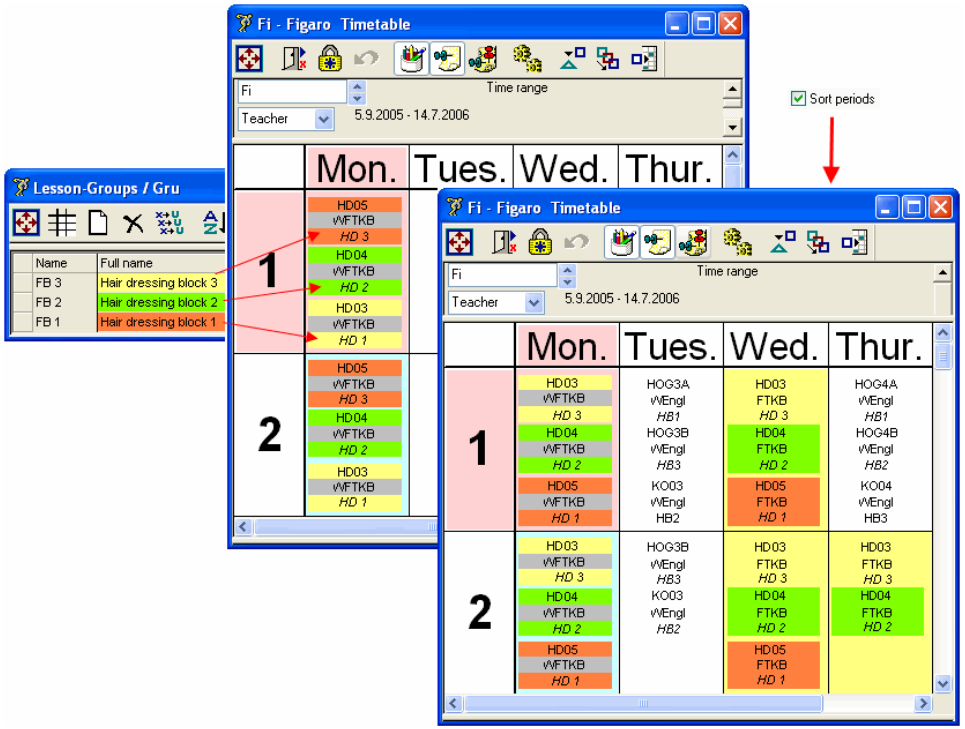

### Sort periods

When several lessons take place in the same period on the same week day, but in different weeks, sort the lessons by start date using this function.




The following example shows the timetable of a vocational school with block lessons:

The teacher Figaro teaches three block lessons at three different times. The hair dressing block 1 starts on 5.9 and ends on 26.9, hair dressing block 2 is from 27.9 - 31.10 and block 3 from 1.11 - 5.12. Normally, the three blocks are shown on the timetable in the order in which they were entered into course groups. Select the option "Sort periods" on the "Layout 2" tab to sort and display the three hair dressing blocks by start date.




### Show a.m./p.m. division line

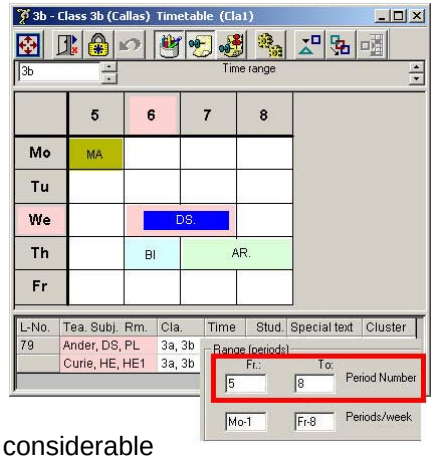
Improve the clarity of a timetable by adding a line to separate morning lessons from afternoon lessons. It is also possible to issue a timetable only for afternoon lessons by restricting the timetable to the desired periods ("Selection range" under <Timetable Settings>) (see the example on the following page).

### HTML index page with full names

See the section "Timetables in HTML format" on p.252.

### Use alias for details window/legend

Displays the alias of the different elements in the timetable details window and the legend (e.g. changes your abbreviated name "MA" to the common school name "Math"); (see section "Alias Names" on p.70).




### Do not print empty rows

Empty rows will not be printed. This option allows for considerable savings in paper (especially for overview timetables with formats 20 or 30) and space (timetables in HTML format).

### Auto-size for the details window

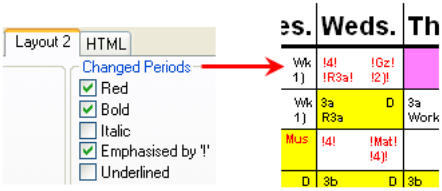
Automatically resizes the period details window (bottom part of the timetable window) to fit the contents.

### Print black & white

Allows colour coding on screen displays, but black & white print on printed timetables.

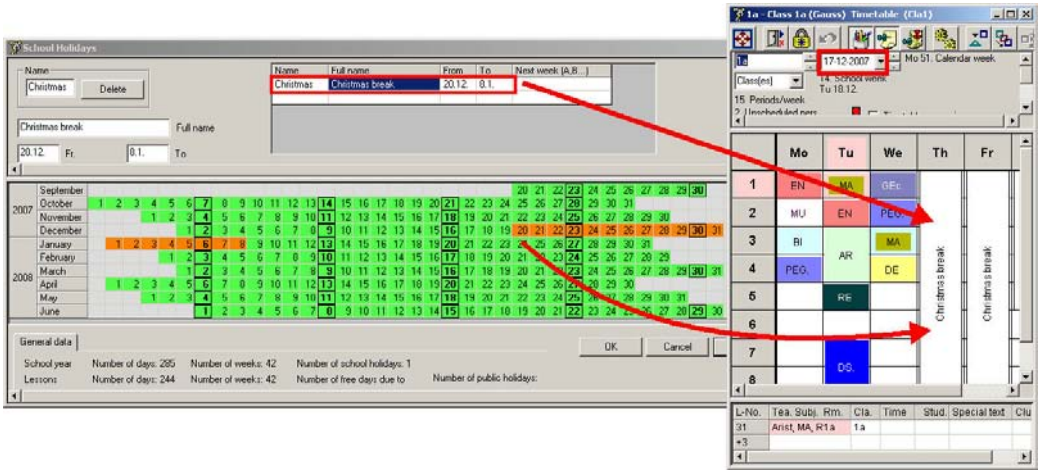
### Highlight changed periods

Allows you to customise the highlighting of changed periods (for use with the timetable comparison function and the *Cover Planning* module). The example shows changes on the regular timetable highlighted in red, bold, and marked with an !.

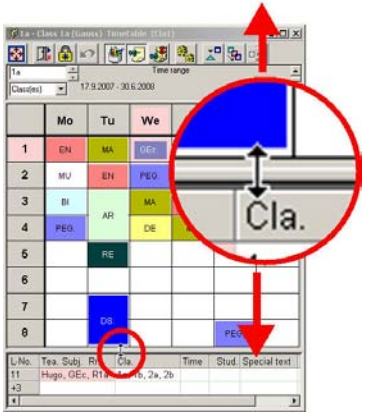


## School Holidays

The timetable formats 1 and 10 display the free days entered under "Master Data | School Holidays" when the timetable display is set to weeks (<Timetable Settings>, "Selection range | Calendar week").



## Font



The overall size of the timetable window not only depends on the details displayed in the timetable periods, but also on the selected font. The font size and type can be changed under <Timetable Settings>, "General | Font".

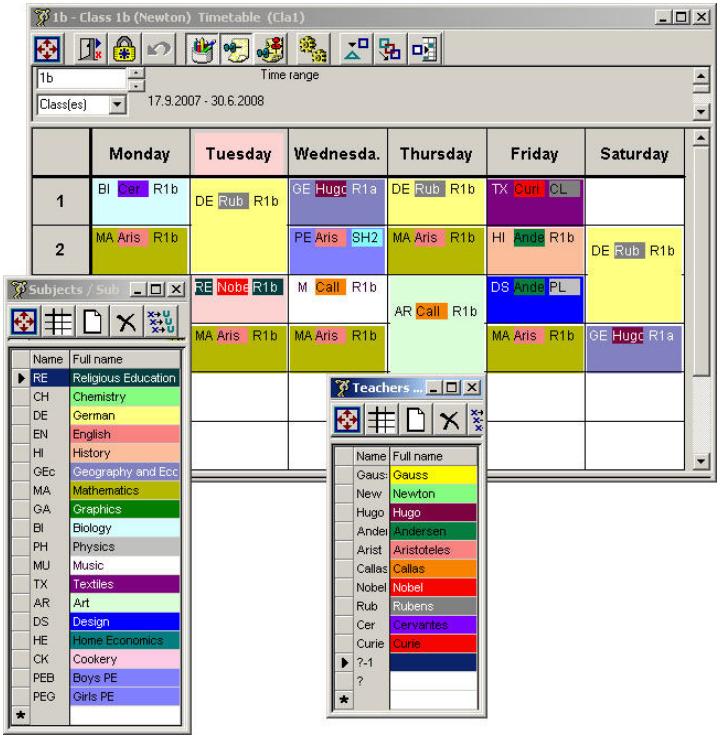
The relative size of the timetable windows can be changed as follows:

- Move the cursor to the dividing line between the timetable window and details window. The cursor changes to an up-and-down arrow..
- Hold down the <Shift> key and drag the line up or down.
- Release the mouse button. The timetable window resizes to the specified size.

## Colour codes

The colour codes specified for elements under master data will be displayed in the timetable.

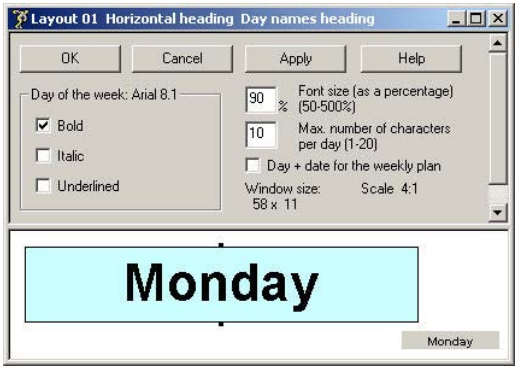
**Colour coding of elements**



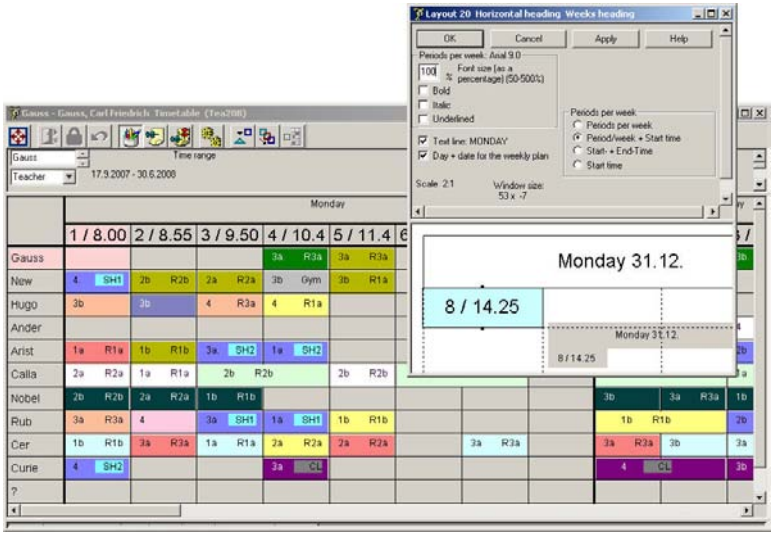

The example shows the colour coding of subjects and teachers, i.e. teacher Rub (grey background, white font) teaches a double period of German (yellow background) on Tuesday.

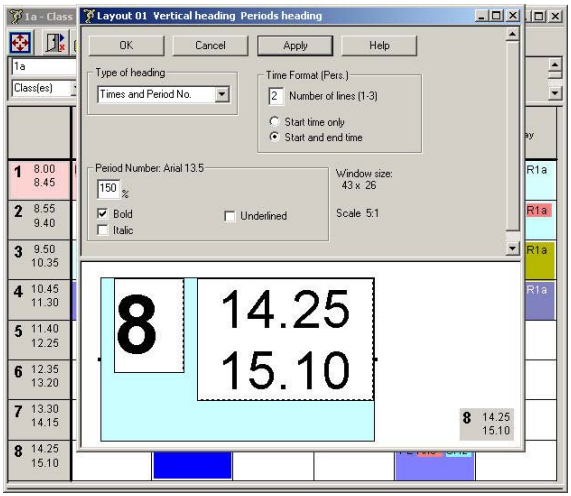
## Column headings

Customise column headings (e.g. days of the week) under "Column heading" under "<Timetable Settings>.



The overview timetables with format 20 provide options for the display of additional information such as dates or start and end times (see example).




## Row headings

The row headings (e.g. start times) can be customized under "Row heading" under <Timetable Settings>.

You can display either the period number or the period times. In addition, you can choose between single and multiple row display and specify the font type and size. As always, you will see an example of your settings in the bottom right hand corner of the preview pane.

# Printing

Print out timetables by clicking on <Print> or <Print Preview>. Alternatively, you can use the shortcut key Ctrl - P. This key combination takes you to the "Print selection" window where you can enter further settings. Click on <OK> to open the print dialogue or the page preview.

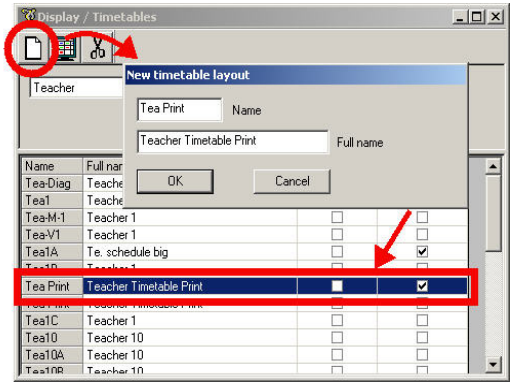
**Print**

**Print Preview**

Create customized print views if you want the printed versions of your timetables to differ from the screen display.

## New print view

Create a new timetable view (see description under "New" on p.219) based on the timetable that most resembles the print version you want to create. Assign a new descriptive name to the new timetable format (e.g. teacher timetable print).




Customise the period display in the period window and in the row and column headings as described in the previous chapters.

As a general rule, the print version will be identical to the screen display unless you customise the print versions or add additional information.

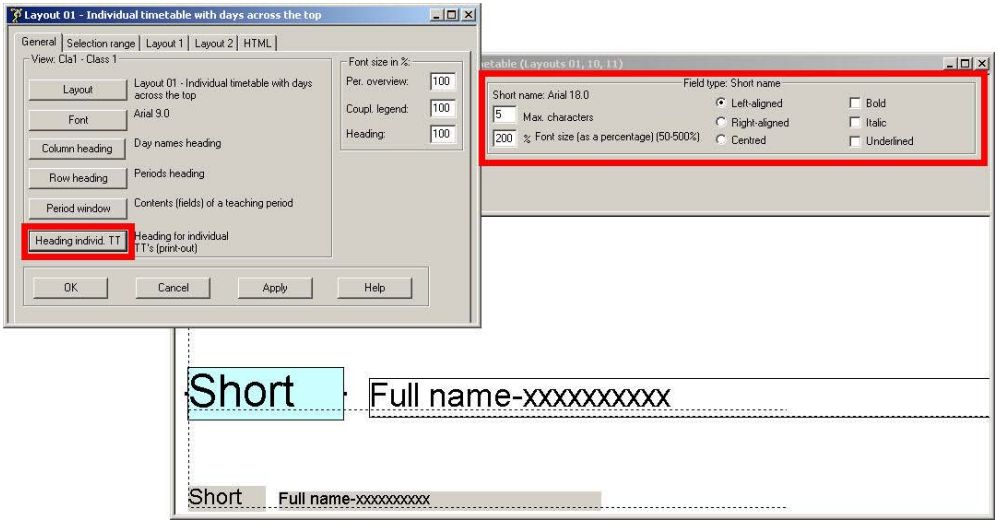
## Headings

Customise headings on printed timetables (formats 1, 10 and 11) as follows:
Open the file *demo.gpn* and a class timetable ("Timetable | Classes") and the window for editing the headings of individual timetables (<Timetable Settings>, "Heading individual timetables").

**Timetable-Settings**

Per default, the full and the abbreviated names of the element will be displayed. Layout and format (font size, alignment, font style etc.) of individual headings can be changed in the upper right-hand corner of the window.

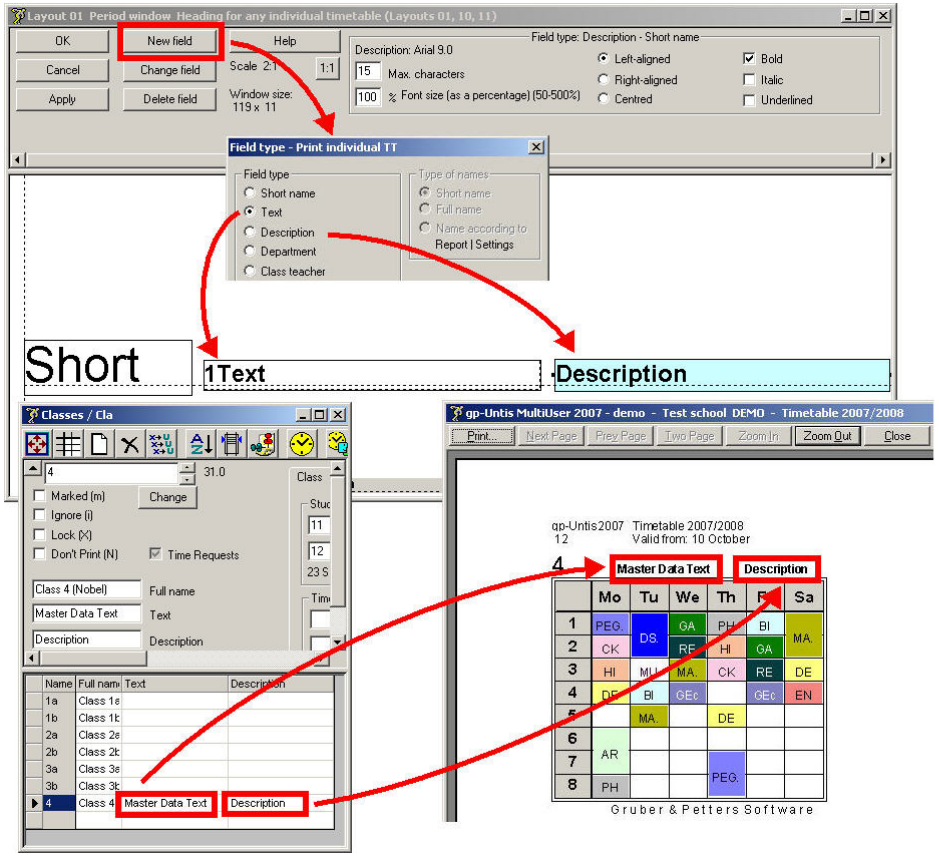
Click on <New field> to insert additional headings into your timetable (see example on the following page). The following additional headings are available.




### Text, Description

You can assign a text and a description of your choice to each master data element (via "Master Data | Descriptions") and instruct the software to include these details in the headings of printouts.

The example shows a heading containing the text and description entered under the master data for class 4. The two fields are arranged side by side. The maximum number of characters was extended to 15 and the font style set to bold.

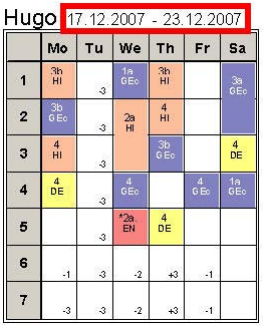



### Department

Allows you to include the name of a department in the heading of printed timetables (useful when working with department timetables).

### Class teacher

Allows you to include the name of the class teacher (entered under the master data of a class) on printed class timetables.




### Time range

Select the time range you want to display in the heading. You can choose between calendar week, the time period, a customized date range or the total school year - depending on the date range entered under "Selection range" under <Timetable Settings>.

### Term

Allows you to include the full or abbreviated name of a term in the heading of printed timetables (for use with the *Multiple Terms Timetable* module).

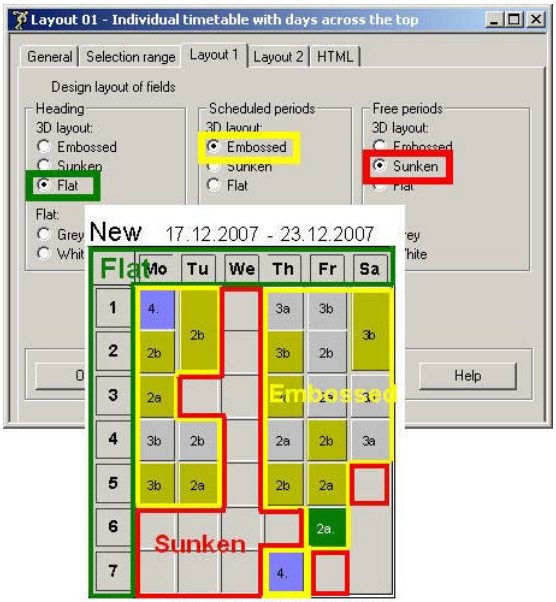
### Fixed (constant) text

Text entered here (e.g. elective subject timetable) is displayed on all timetables of this format.

## Layout

**Timetable-Settings**

Modify the print layout via the "Layout 1" and "Layout 2" tabs under <Timetable Settings>.




### Layout of fields

Select the 3D layout option for Headings, Scheduled periods and Free periods via the option "3D layout" (see example on the left).

**Print black & white**

Select this option if the timetables on your screen are colour coded, but you want the timetables to be printed in black & white (for instance, because your printer does not support colour printing).

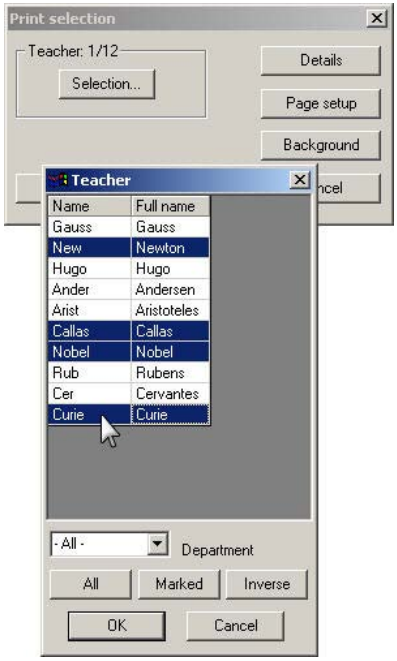
**Do not print empty rows**

Empty rows will not be printed. This option allows for considerable savings in paper and space (especially for overview timetables and timetables in HTML format).

Open the "Print selection" window via <Print> or <Print Preview> to enter further print settings. The settings only apply to the selected timetable format.

**Print selection**

## Selecting timetables




Per default, the software will always print the timetable displayed on the screen. Select several timetables of the same format to be printed at the same time by clicking on <Selection…>.

**Using the mouse**

Select the timetables of individual elements by holding down the left mouse button and highlighting the desired elements or by using the shortcut key Ctrl+left mouse click (see example).

**(select) All**

Allows you select all the elements.

**(select) Marked (elements)**

Allows you to select all the elements marked with the specific code "marked" under master data.

### Inverse

Allows you to mark all the elements *not* selected (useful for print selection involving two different groups of elements, such as part-time and full-time teachers).

### Department

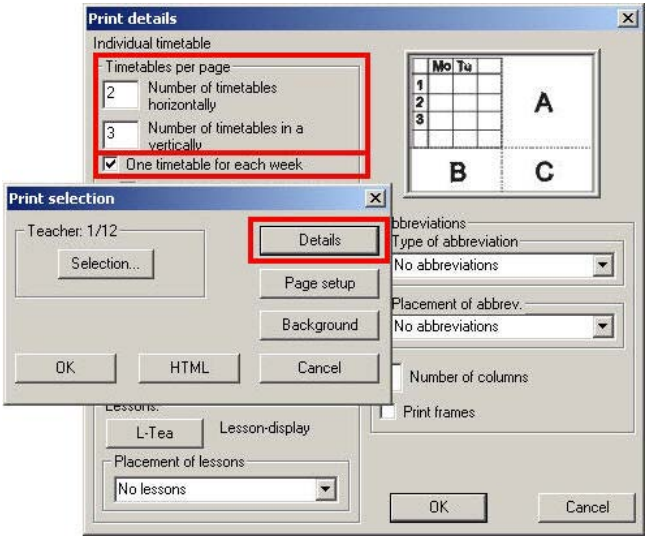
Allows you to print out the teacher timetables of a particular department.

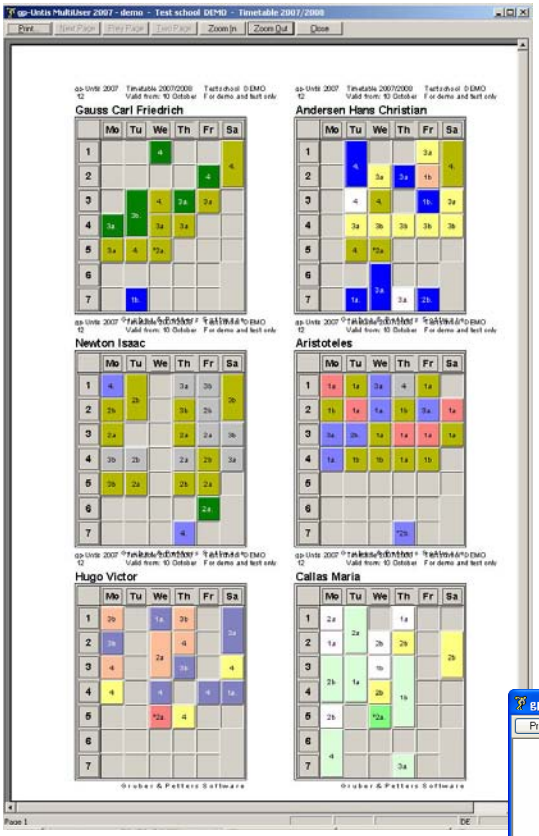
## Details, individual timetables

Click on <Details> under "Print selection" to access further printout options. The settings options vary depending on the timetable format. The following descriptions apply to individual timetables with formats 1 and 10.

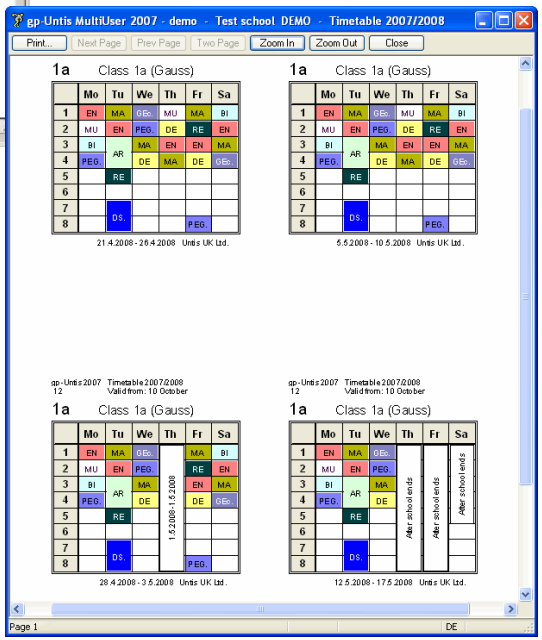
### Timetables per page

Specify how many timetables you want to print on one page. The example on the following pages shows a page containing 6 teacher timetables.






**Several timetables on one page**




Tick the option "One timetable for each week" if you want to print a separate timetable per week for each selected element (see example on the right). This is a particularly useful option for schools with irregular lessons. The number of weeks for which timetables are printed depends on the date setting entered under <Timetable Settings>. Tick the option "New page for each element" if you want the timetables for each new element to start on a new page.

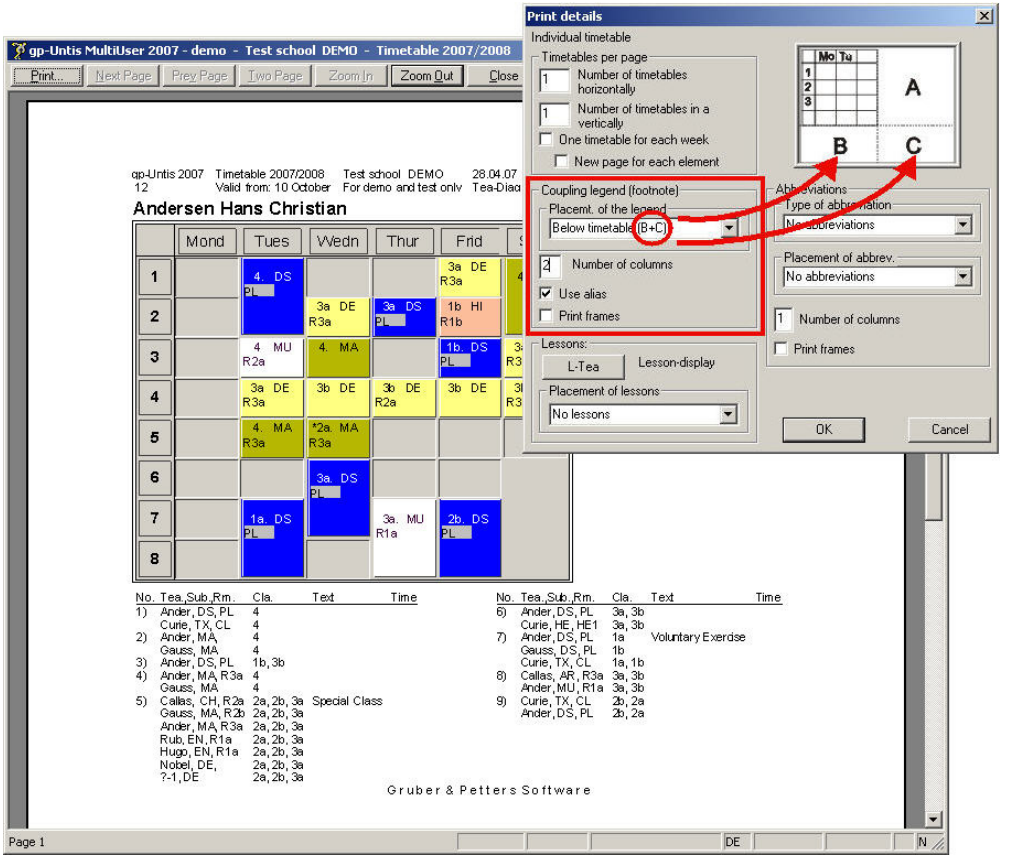
## Legend

A legend will be printed whenever there is insufficient space in the period window to display all the relevant details of a lesson. For a class timetable, such details include rooms, subjects, teachers and time restrictions, if any.

### Timetable-Settings



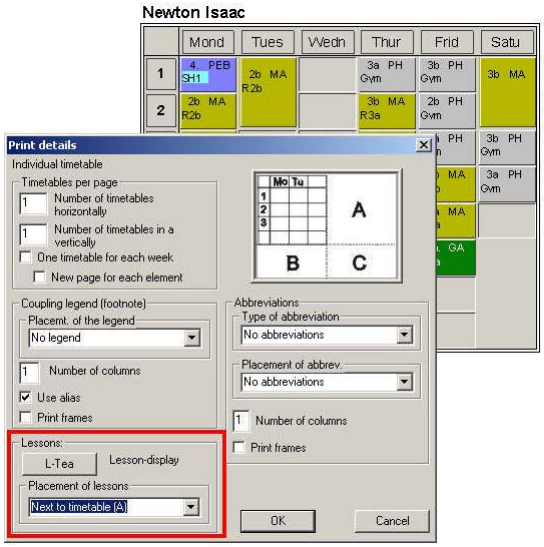

Use the option "Placement of the legend" to specify the location of the legend on the page or to print the legend on a separate page. Additionally, you can specify the number of columns in the legend, the use of alias names and if the legend should be printed in frames. The font size of the legend can be customized under <Timetable Settings>. If you want to exclude a certain lesson from the printed legend, simply mark the lesson with the code "(L) Not in legend".



### Lesson

Printouts of class and teacher timetables can also include the lesson view. Select the desired lesson view via the button in the Lessons section of the "Print details" window. The short name of the selected lesson view will be displayed on the button (e.g. <L-Tea> or <L-Cla>). The print settings specified for the lesson view will also apply to the printout.

The example shows the timetable of teacher Newton complete with lesson distribution.

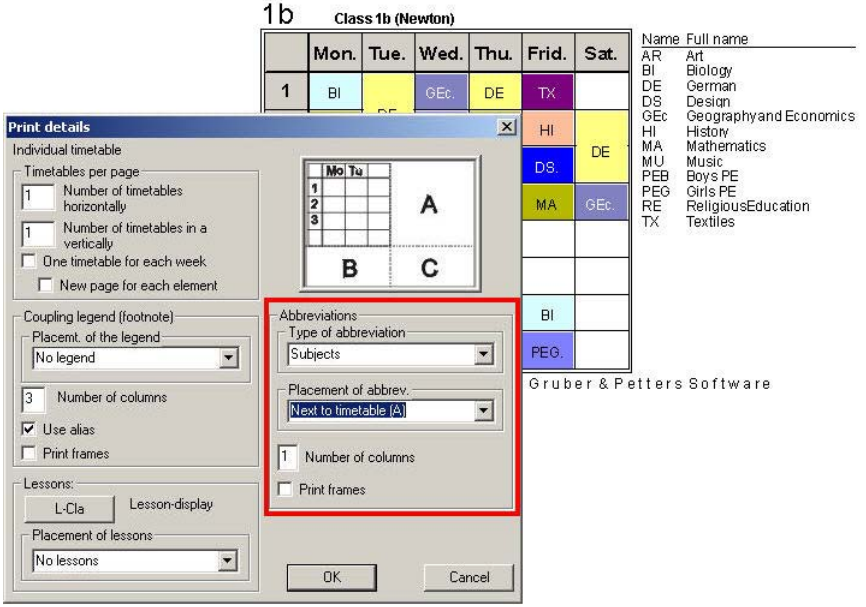


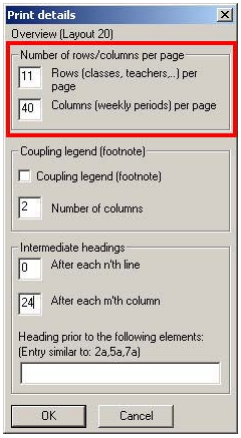

| L-No. | Cl,Te. | Teacher | Subject | Class(es) | Subject room | Home Room |
|---|---|---|---|---|---|---|
| 94 | 2,1 | New | GA | 2a,2b | | R2a |
| 90 | | New | MA | 2a | | R2a |
| 95 | | New | PH | 2a | Gym | R2a |
| 8 | | New | PH | 2b | Gym | R2b |
| 93 | | New | MA | 2b | | R2b |
| 9 | | New | PH | 3a | Gym | R3a |
| 10 | | New | PH | 3b | Gym | Ps1 |
| 92 | | New | MA | 3b | | Ps1 |
| 74 | 1,2 | Curie<br>New | PEG<br>PEB | 4<br>4 | SH2<br>SH1 | Ps2 |

Gruber & Petters Software

### Abbreviations

A legend can be printed for the abbreviations used for subjects and/ or teachers. The following example shows a legend containing the abbreviated and the full names of subjects. The legend is displayed on the right-hand side of the timetable.



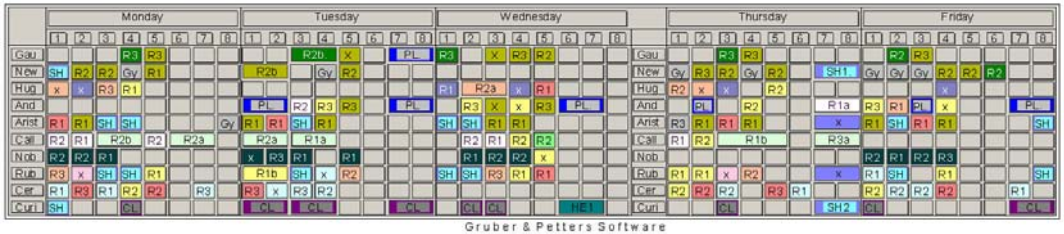




## Details, overview timetables

The following print options are available for overview timetable formats 11, 20 and 30:

### Number of rows/columns per page

This option allows you to specify the number of rows and columns to be printed on one page. The example on the following page shows an overview timetable for the room availability for teachers. The page contains 11 rows and 40 columns.

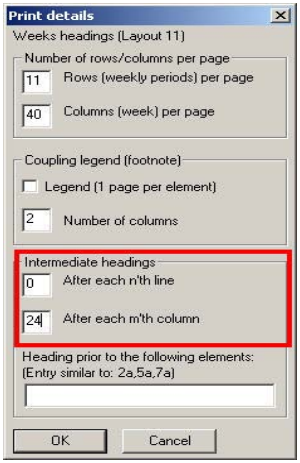


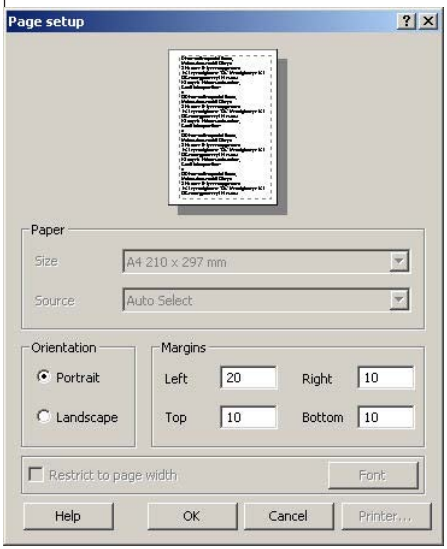

## Legend

The printed versions of overview timetables can also include a legend containing the details for which there is insufficient space in the timetable periods. The legend of overview timetables is always printed on a separate page.

## Intermediate headings

Overview timetables can contain a large amount of data. For purposes of clarity, the row and column headings can be repeated at regular intervals. In the example above, the abbreviated names of teachers are repeated in every 24th column.





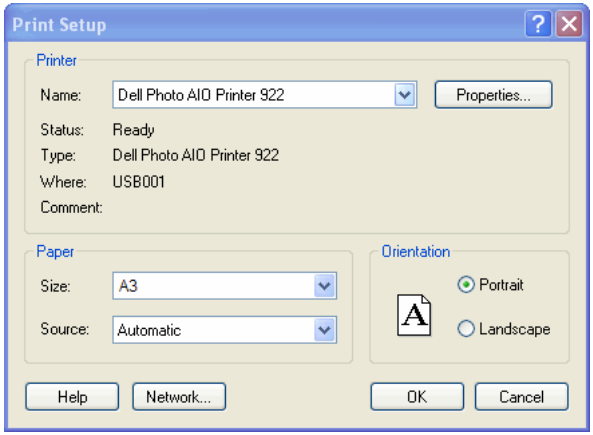

## Page setup

Use this option to specify the paper orientation (portrait or landscape) and the margins. Please note that different printers require different minimum margin widths to be observed.

### A3 print

It may often be useful to print overview timetables on A3 size paper. If your printer supports printing on A3 paper, proceed as follows:

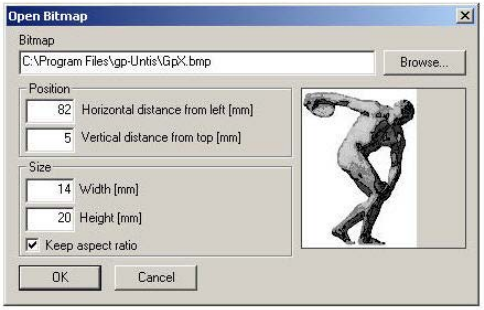
Set your printer to paper size A3 (under "File | Print Setup…"). The timetable is automatically printed in A3 format.

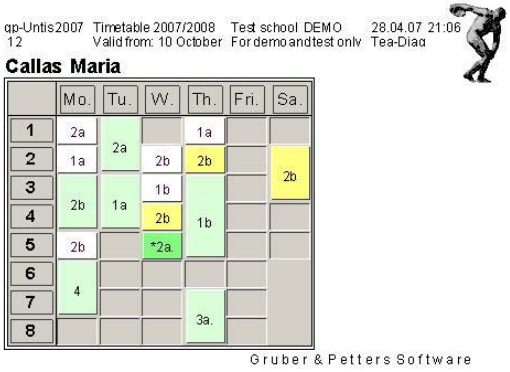


## Background

You can include images and graphs on your printed timetables. The image must be available as a bitmap file (Windows BMP format). Depending on the bitmap, you can use this function to print your school logo or a background for the timetable.

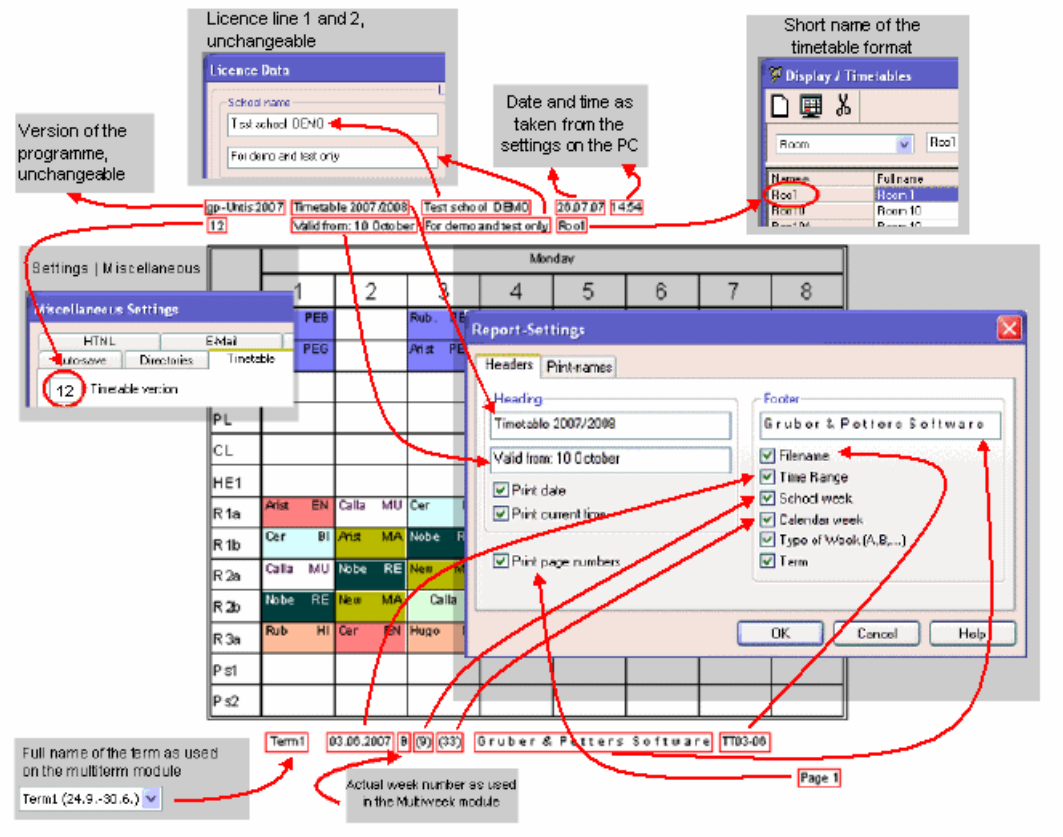
- Open the "Bitmap" dialogue by clicking on <Background> under "Print selection".
- Select the type of bitmap file you want to include (<Browse…>). The selected image will be shown in a preview pane on the right-hand side of the dialogue box.
- Use the "Position" fields to specify where the upper left corner of the image should be located with respect to the left or upper margin of the timetable. Use the "Size" fields to specify the size of the printed image. Tick the box "Keep aspect ratio" to prevent distorting the image. gp-Untis calculates the dimensions of the image from the most recently entered value and the aspect ratio of the image.



## Header and footer

The following example shows the different display options for headers and footers.



## Several classes on one timetable

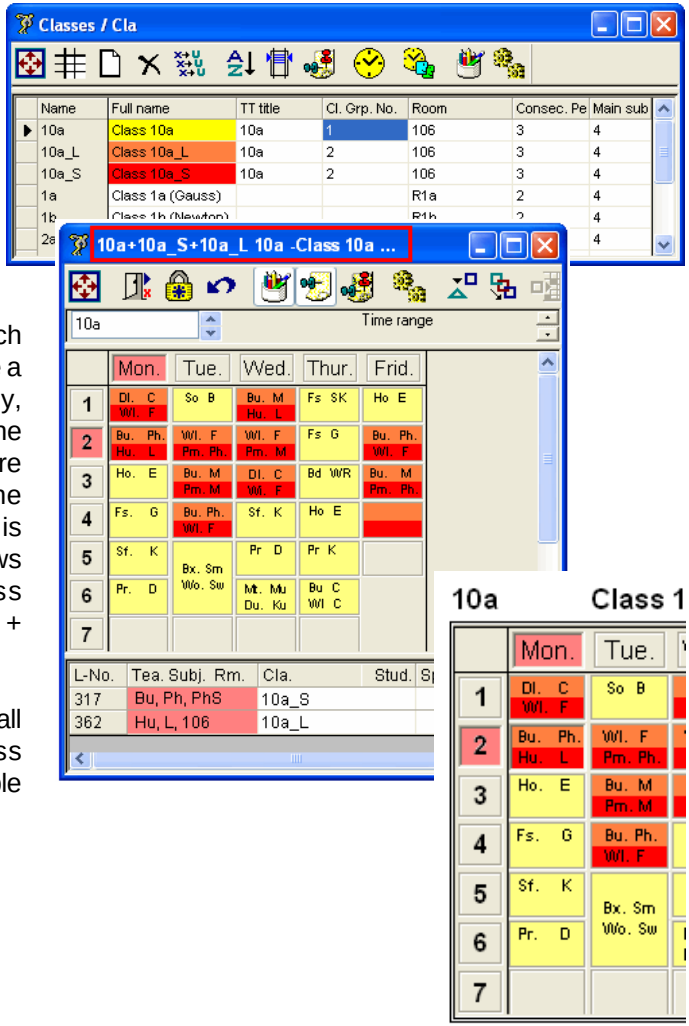
**Divided classes**

When a class is divided into two components, for instance a science and a languages branch, but the timetables of the two components differ in only a few key respects, it can be useful to issue the timetables of both class components on a single timetable.

To do this, enter the combined class name of the classes whose timetables you want to print on a single timetable in the "Master class (TT print-out)" field under "Master Data | Classes".

The example shows a class with a science (10a_S) and a languages component (10a_L). The period details window shows that the students of the science branch (10a_S) are scheduled to have a Physics lesson on Monday, period 2, while the students of the Languages branch (10a_L) are scheduled to have Latin. The combined name of the class is 10a. The screen display shows the names of all class components (10a + 10a_S + 10a_L).

The timetable printout contains all the information of the class components on a single timetable for the class 10a.

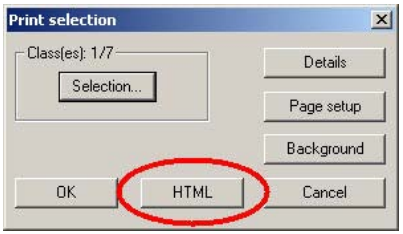


## Timetables in HTML format

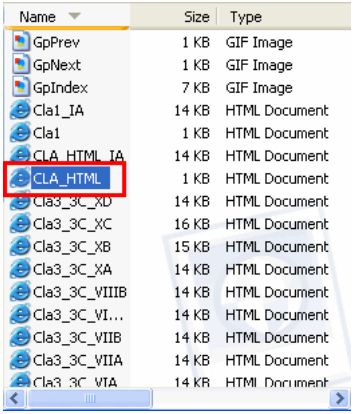
To make timetables available via the intranet of your school or via the internet, you can print out timetables in HTML format.

Creating timetables in HTML format is similar to creating printouts of timetables. Proceed as follows:

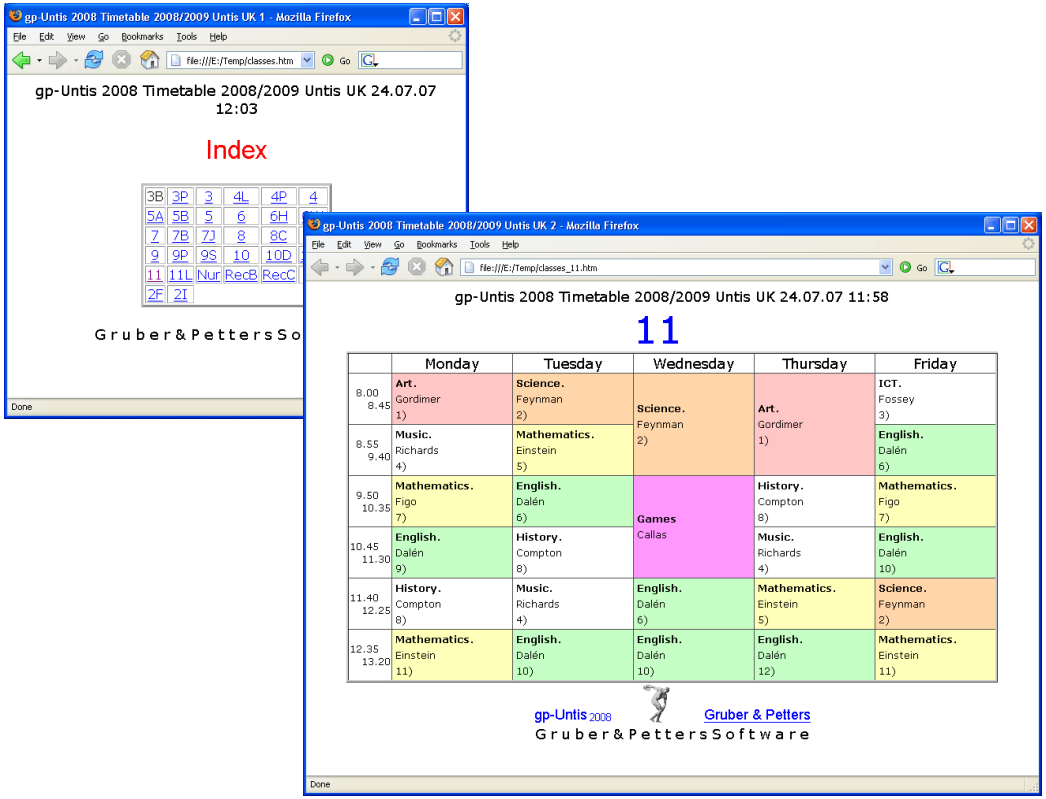
- Activate the timetable you want to save in HTML format and open the dialogue box "Print selection" by clicking on <Print> or <Print Preview>.




- Select the elements you want to print (i.e. save in HTML format) and customise settings and details (e.g. legends etc.) as normal.
- Click on <HTML>.
- A file dialogue box appears. Enter the name of the directory where you want to save the HTML files and click on <Save>.




An index file will be created for each output, allowing access to each of the issued elements. The index file name is based on the format used (e.g. CLA_HTML ). Use the file to open the index with the links to the exported elements.

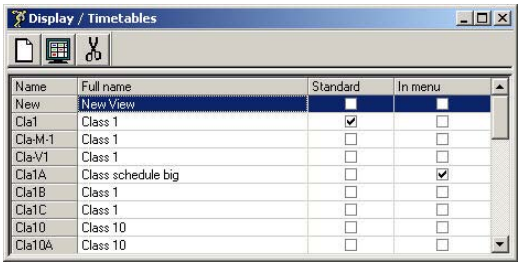



## Bequerel Henri

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 1 | --- --- --- --- | **5A** *Mathematics* 5A's classroom | **6** *English* 5A's classroom | **6** *English* 5A's classroom | **5A** *Mathematics* 5A's classroom |
| 2 | **5A** *English* 5A's classroom | **11** ***French*** **ICT Room** **Substitution** | **5A** *Mathematics* 5A's classroom | **5A** *Mathematics* 5A's classroom | **5A** *Drama* Hall |
| 3 | **6** *English* 5A's classroom | **5** *CDT* Junior CDT room | **5A** *English* 5A's classroom | **5A** *English* 5A's classroom | **6** *English* 5A's classroom |
| 4 | **5A** *Geography* 5A's classroom | **5A** *ICT* 5A's classroom | | **5A** *Geography* 5A's classroom | **5A** *Mathematics* 5A's classroom |
| 5 | **5A** *History* 5A's classroom | **6** *English* 5A's classroom | **3P** *Drama* | **6H** ***Drama*** **Hall** **Shifted from 6th per.** | **5A** *English* 5A's classroom |
| 6 | | **5A** *English* 5A's classroom | | --- --- --- --- | **6** *English* 5A's classroom |

gp-Untis 2008 Gruber & Petters
Gruber&PettersSoftware

- When using the *Cover Planning* module, the updated timetables also contain complete details on teaching cover.




# Import and export of views

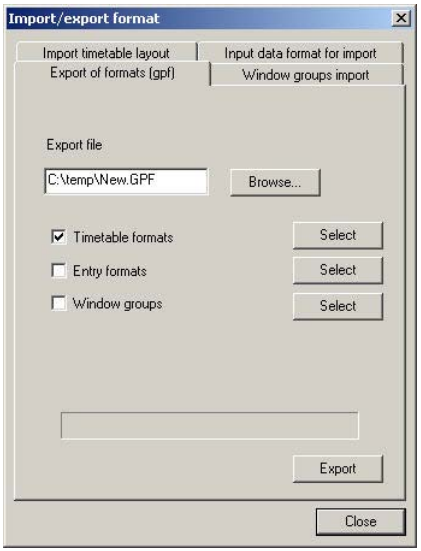
As a rule, the views you create are saved in the current work file. In order to make these views available for use in other files, you need to import or export them.

▶ Open the file *demo.gpn* and create a new timetable view as described on p.19.

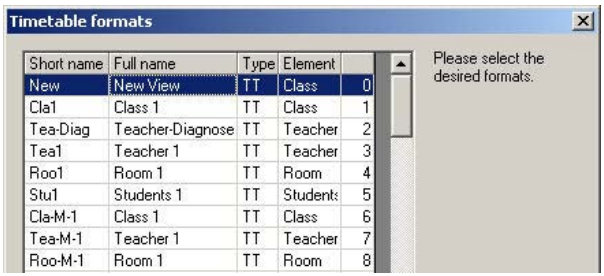
▶ Select "File | Import / Export | Timetable/Input formats". Select the "Export of formats (gpf)" tab from the dialogue box.

▶ Enter a name in the name field of the export file (e.g. "New.gpf").

You can export the format details of timetable views and of master data views. Select a particular timetable view for export by clicking on <Select> in the row "Timetable formats".




▶From the dialogue box, select the timetable view whose format you want to export and click on <OK>.

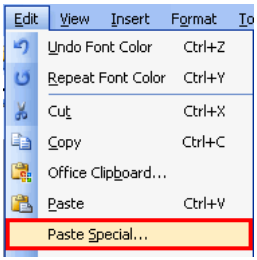


Activate the <Export> button in the "Import/export format" window. The format data has been saved in the file "New.gpf". You can now make your formats available to other gp-Untis users (minus school data) or import the formats into other files.

Use the same method to import formats from a *.gpf* or *.gpn* file.

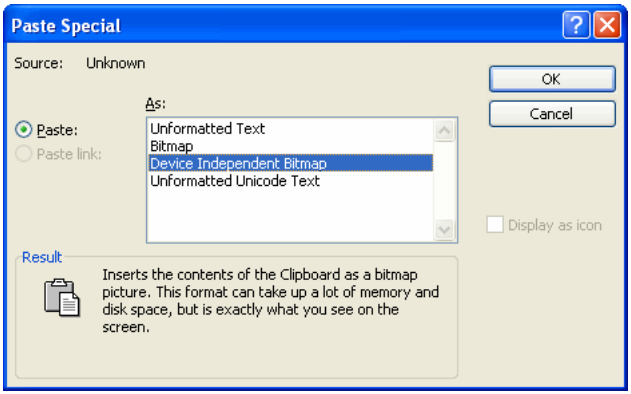
## Using the clipboard

Using the clipboard, you can export timetables to other programmes such as word processing programmes.

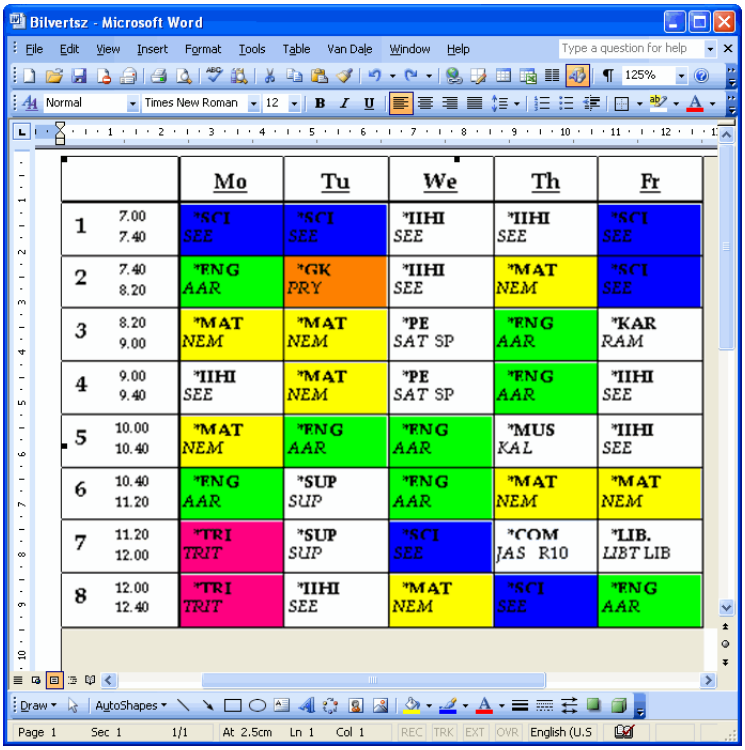


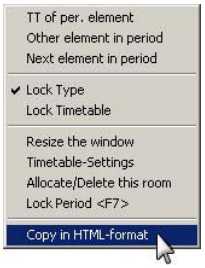

Proceed as follows:

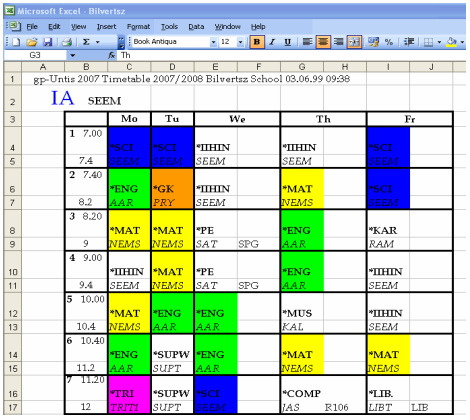
- Click on the timetable you want to export (title bar must be blue).
- Copy the timetable to the clipboard (menu command "Edit | Copy" or via the shortcut Ctrl - C.
- Switch to your word processing programme. Select "Edit | Paste" to insert the contents of the clipboard in the form of an image.
- The "Edit | Paste" function can also be used to export the legend.



**A timetable in a word processing programme**




- Right click on the timetable you want to export and select "Copy in HTML-format".
- Switch to your spread sheet programme and insert the contents of the clipboard (via "Edit | Paste" or Ctrl - V).

# User tips

This chapter describes additional options and useful settings not covered under master data and lessons.

## Settings



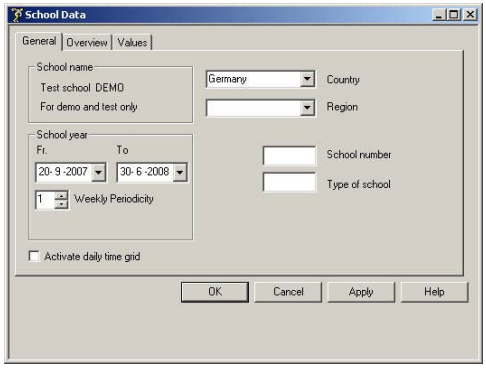

Use the "Settings" menu to enter various other useful settings. The most important of these will be introduced in the following section.

### Time Grid

The functions of the time grid are described in detail in the brochure "gp-Untis, Getting Started".

### School data

Use the "School Data" window to enter details such as the start and end date of the school year, country, region and type of school. The details entered in this window are required for a number of different (statistical) processes and calculation methods.



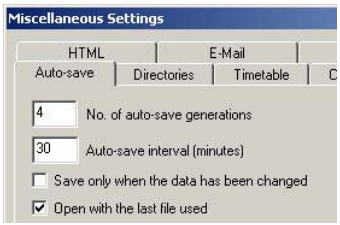

The "Overview" tab provides an overview of the number of classes, teachers, rooms and lessons at your school.

### Calendar

The calendar can be used to enter details such as free periods on a specific day.

# Miscellaneous Settings

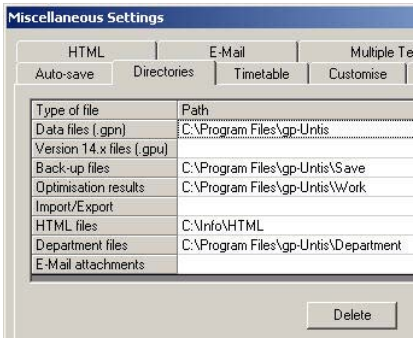
## The "Auto-save" tab




Use this tab to specify the time interval between automatic data saves and how many backup generations you want the software to archive. The settings in the example show, for instance, that gp-Untis saves data every 30 minutes and creates four backup generations. The software saves the data in the files *Save1.gpn*, *Save2.gpn*, *Save3.gpn* and *Save4.gpn* with the most up-to-date data saved in the file *Save1.gpn* and the oldest data in the file *Save4.gpn*.

When the option "Open with the last file used" is active, gp-Untis automatically opens the file last edited when the programme starts up. Suppress this behaviour by pressing the <Shift> key during start up.

The option "Start with the current date" allows you to specify if windows containing date selection options should display the current date or the date when the file was last saved.

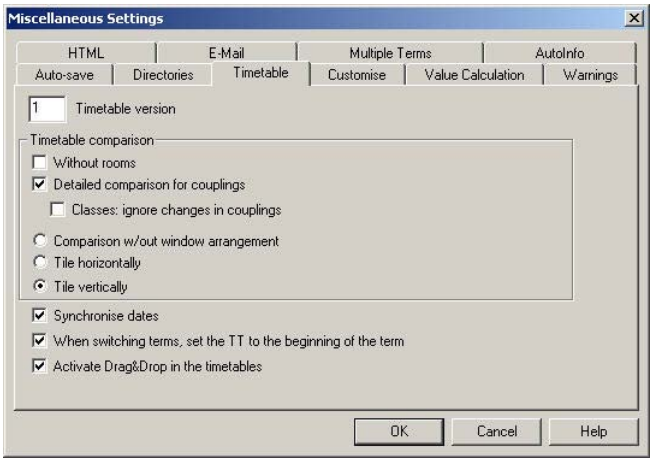



## The "Directories" tab

This tab allows you to specify various standard paths. We would recommend that you create your own directories for your backup and work files (i.e. the files containing the different timetables of your school saved during optimisation) and enter the paths on this tab.

### The "Timetable" tab

The settings on this tab are relevant for a number of different timetable functions.




For instance, the timetable version number you can assign to each timetable version will be included on all printouts (see the chapter "Timetable construction" on p.250).

The different options for timetable comparisons are described in the chapter "Timetable comparisons".

The "Synchronise dates" option allows you to specify if a date change implemented on *one particular* timetable should also apply to *all other* timetables open on the screen. This function is particularly useful for use with the *Multi-Week Timetable* and the *Multiple Term Timetable* modules.

**Note**

The option "When switching terms, set the TT to the beginning of the term" is only active for use with the *Multiple Term Timetable* module. The last option "Activate Drag&Drop in the timetables" allows you to activate or deactivate the manual timetabling function.

## Licence Data

The input of licence data is described in detail in the brochure "gp-Untis, Getting Started".

# Time Requests

**Time requests**

Time requests are an important element of the gp-Untis timetabling software. Time requests can be entered for master data elements and for lessons. The button for this function can be found on the tool bar of the master data or lesson window.

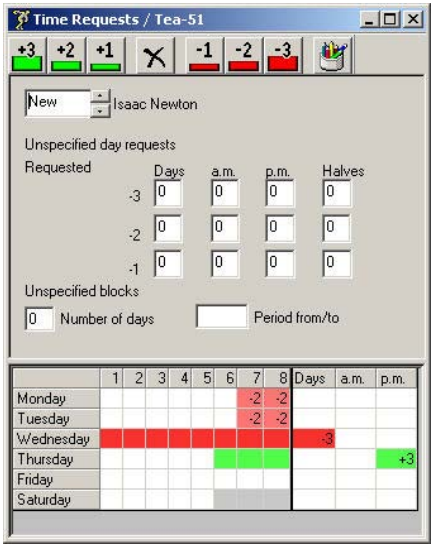
Time requests are graded from "-3" (completely blocked) to "+3" (core time, a period must be scheduled).

There are two different categories of time requests – specified and unspecified time requests. Specified time requests refer to specific days and periods. Unspecified time requests, by contrast, are requests where only the duration and the type of request (e.g. 1 day of "-3") are specified and where the selection of the day or period is up to the software programme.

## Specified time requests

**Example**

- Start gp-Untis and load the file *demo.gpn*.
- Open the master data view for teachers ("Master Data | Teachers") and click on <Time Requests>.




- Switch to teacher New (Newton).

The window on your screen should now resemble the figure on the left. The following time requests are active:

Monday and Tuesday, periods 7 and 8: "-2". If possible, Newton should not have lessons scheduled in these periods.

Wednesday, all day: "-3". This means that Wednesday is definitely blocked, i.e. teacher Newton is not available to teach on Wednesdays.

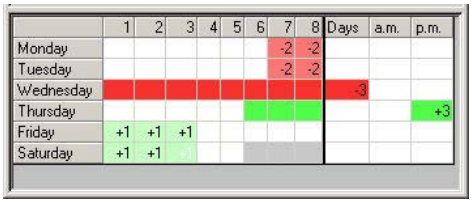
Thursday (pm): "+3". Newton wants to teach periods 6 – 8, if possible.

Please note that time requests for entire days and half-days can be entered in the lower right-hand side of the time grid window.

Assign the time request "+1" to days Fri - Sat, periods 1-3.

**Example**

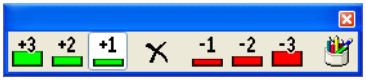
- Click on "+1"
- Highlight the area Fri - Sat, periods 1-3.




You have entered the time request "+1" for Fri - Sat, periods 1-3 for teacher New.

Please note that the button for time request "+1" remains active until you deactivate the function by clicking on it. This means that you can enter further "+1" time requests at this time by clicking on the relevant periods in the time grid.

**Note**




Delete time requests for certain periods or blocks of periods by highlighting the cells and clicking on <Delete>.

**Delete time request**

## Unspecified time requests

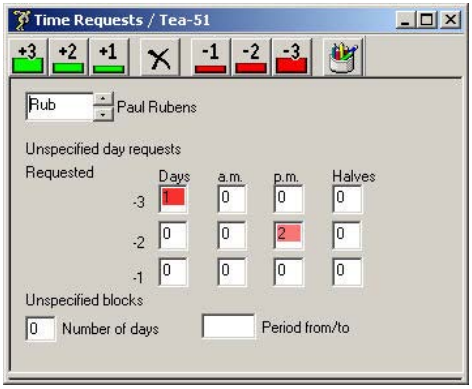
- Switch to teacher Rub (Rubens) using the previous time request example.

**Example**

Teacher Rub is a part-time teacher and therefore entitled to a free day per week. If possible, the teacher would also like two additional free afternoons.

Enter the following data under unspecified time requests:

- Enter "1" in the row "-3" under "Days". This instructs the optimisation tool to schedule one free day for teacher *Rubens*.
- Enter "2" in the row "-2" under "p.m.". The optimisation tool attempts to schedule two additional free afternoons for teacher *Rubens*.

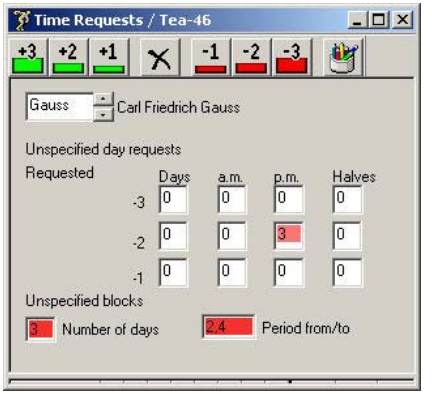



Enter time requests for half-days in the column "Halves". The optimisation tool decides whether to schedule the half-day in the morning or the afternoon.

Note: Use unspecified time requests whenever possible to allow the optimisation tool as much flexibility as possible.

In addition to the above, you can enter unspecified blocked periods for each element.

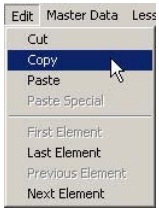
The example on the right shows a time request for teacher Gauss. He would like three free periods (specifically periods 2 - 4) on three days of the week.




**Tip**

From version 2007 onwards, time requests can be entered directly in the scheduling dialogue.

## Copying time requests




You can copy the time requests of an element to the clipboard and paste them in different elements.

## Deleting time requests

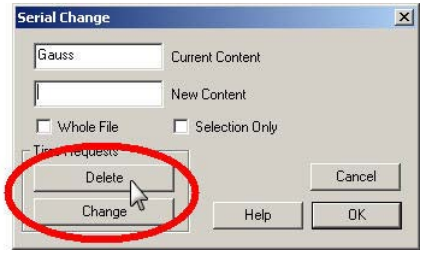
Delete the time requests of all the elements of a view at the same time by clicking on <Serial Change> and then on <Delete> in the "Time Requests" section of the dialogue box.

**Example**

- Start gp-Untis and load the file *demo.gpn*.
- Open the master data view for teachers ("Master Data | Teachers") and click on <Serial Change>.

**Serial Change**

- In the input block "Time Requests", click on <Delete>.



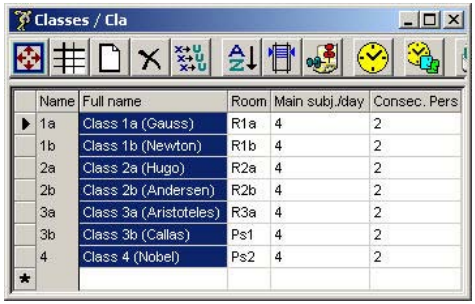

You have deleted the time requests for all classes.

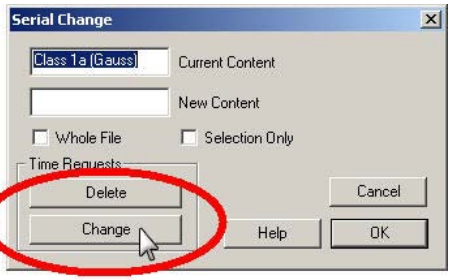
The input block "Time Requests" also contains a <Change> button that can be used to modify the time requests for *all* the selected elements of a view. Proceed as follows:

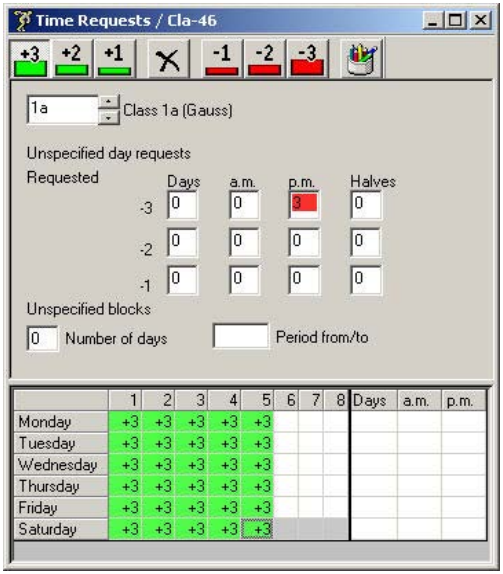
- Start gp-Untis and load the file *demo2.gpn*.
- Open the master data view for classes.
- Open the time request window for class 1a.

**Serial Change**

- Enter the time request "+3" for Mon - Sat, period 5.
- Select all classes in the master data window.
- Click on <Serial Change>.
- In the input block "Time Requests", click on <Change>.




The time requests for all the selected classes will be modified to reflect the settings of the first (top most) selected element in the list (see example).

Time requests can also be deleted directly in the scheduling dialogue (see the chapter "Manual timetabling" on p.165).

## Core time

**Core Times**

If you would prefer the software to schedule morning lessons first, enter a time request of "+3" for some of the morning periods (usually the first 4) under classes. Use the <Change> function described above.

The time request "+3" defines the so-called core time. The optimisation tool *must* schedule periods in the defined core time

range, if at all possible. The gp-Untis optimisation algorithm regards a core time violation as a serious offence. Such violations are displayed in the optimisation window and as individual diagnosis points. Please make sure that the number of core time periods entered for an element is smaller than (or equal to) the number of periods defined for the element.

### Colour codes

Use this function to customise the colour codes used to highlight the different time requests on the timetable or in the scheduling dialogue.

 **Colour**

## Lunch breaks

You can specify the exact times of a lunch break between morning and afternoon lessons for classes and teachers using the time grid.

You have the following lunch break options:

- Specify a unified lunch break for the entire school (e.g. 12:00 - 13:00).

In the time grid, enter 12:00 as the time when the last morning lesson should end and 13:00 as the time the first afternoon lesson should start. The software will treat the time between 12:00 and 13:00 as a lunch break (not as a period).

- Specify element-specific lunch break blocks (time request "-3").

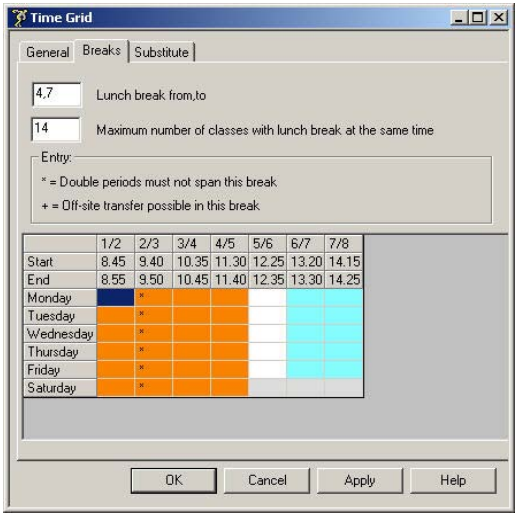
- Include the lunch break in the timetable construction.

This last lunch break scheduling option allows for a better use of subject rooms. The option enables you to specify different lunch break durations for individual teachers and classes. Enter "1,2" in the box "Lunch break Min,Max" to instruct the software to schedule either 1 or 2 lunch break periods for the selected element.
Based on the weighting, the lunch break will be scheduled during

the last morning periods and/or the first afternoon periods.

On a timetable with 5 morning periods and 4 afternoon periods, a two-period lunch break will be scheduled either for periods 4 and 5, periods 5 and 6, or periods 6 and 7.

Vary the time during which a lunch break can be scheduled by specifying the first and the last period when a lunch break may be scheduled (on the "Breaks" tab in the time grid). The boundary between morning and afternoon lessons must lie within the specified time interval (see the figure below).




If your school cafeteria has a limited capacity, use the same tab to enter the maximum number of classes that can have a lunch break at the same time (figure on the left).

Violations against specified lunch break times are displayed in the diagnosis window.

Avoid undesirable lunch breaks for teachers and classes by activating the code "(L) Lunch break = NTP" for the selected element.

# Couplings

The composition of couplings have a major effect on the quality of a timetable. Unfavourable couplings can prevent the construction of a high quality timetable. The following criteria are important for the creation of couplings.

## Teacher teams

**Important!**

Teacher teams are required, for instance, in PE lessons where a class is divided into a male and a female group. Each group requires its own teacher, and both teachers must always be scheduled at the same time. If the teacher of the girls' PE lesson has already been scheduled to teach this group at a given time, the boys' PE teacher cannot be scheduled to teach a different subject or a different class at this time.

As a general rule, it is desirable to keep the number of teacher teams as small as possible, and to ensure that individual teachers are only part of a teacher team if absolutely necessary (see the example at the end of this chapter).

To help you organize your teacher teams, gp-Untis provides a "Teacher team" list where you can view all teacher teams at a glance.

Access the list via one of the two following options:

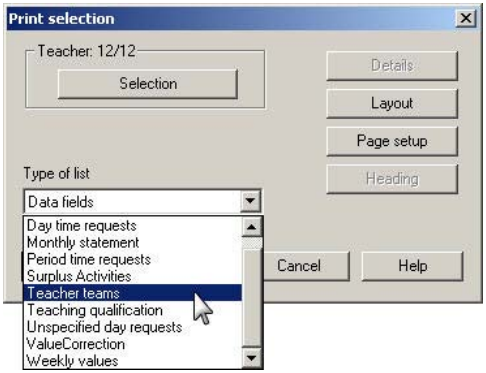
1. Click on <Print> or <Print Preview> in the "CCC Analysis" window, or


**Print Preview**

2. Select the relevant print list from the "Print selection" dialogue under "Master Data | Teachers".


**Print**

Method 1 provides direct access to the list of teacher teams.

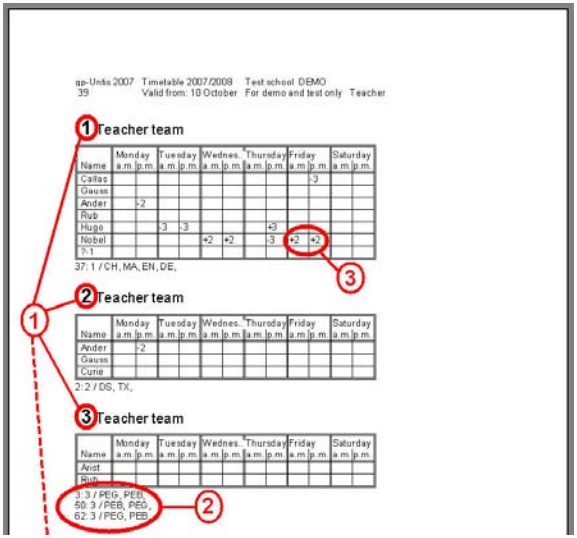



Using method 2, you first need to open the "Print selection" dialogue by clicking on <Print> or <Print Preview> in an active master data window for teachers.

Click on the selection window "Type of list" to obtain a list of all print lists available in connection with teacher master data. Select the list "Teacher teams" (the <Selection> button normally used to select individual teachers is irrelevant for the "Type of list" function and is therefore greyed out).

The following figure shows an example of such a list.

The printout shows:




1 The total number of different teams. The general rule is: the fewer, the better.

2 The lessons (including details) in which a team is involved. The general rule is: the more, the better.

3 The time requests entered for the individual teachers in the team. If a number of different time requests need to be taken into consideration, the timetable quality will deteriorate as a result since a teacher team can only be scheduled when all the teachers of the team are available.

**Example**

In the example above, the PE teachers Rub ("Rubens") and Arist ("Aristotle") form the teacher team no. 1.

You have another teacher team (e.g. team no. 4 comprising of teachers Rubens and Hugo) scheduled to teach Design. Each time, team 4 is scheduled, team 1 would be blocked since teacher Rubens belongs to both of them.

You need to decide if teacher team 4 is necessary at all (since there already is a teacher team for Design, i.e. team 2). You could also find out if Ruben's team colleague Aristotle is qualified to teach Design, as well. If so, the Design lesson could also be taught by team 1. In any case, one teacher team would be eliminated, lending a greater flexibility to the optimisation tool.

As mentioned earlier, the CCC analysis is a perfect tool for identifying such problematic compositions (see the chapter "CCC analysis" on p.119).

**Time Requests**

### Time requests and teacher teams

Time requests are another problematic issue when dealing with teacher teams. In an ideal case, the individual time requests and especially the blocked periods for teachers in a teacher team should overlap as much as possible.

The following figure shows a single teacher team. Please note the blocked periods (time requests "-3").

**1** Teacher team

| Name | Monday | | Tuesday | | Wednes.. | | Thursday | | Friday | | Saturday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. |
| Callas | | | | | | | | | | | -3 | -3 |
| Gauss | -3 | -3 | | | | | | | | | | |
| Ander | +2 | +2 | | | | | | | | | | |
| Rub | | | | | -3 | -3 | | | | | | |
| Hugo | | -1 | -3 | -3 | | -1 | | -1 | | -2 | | |
| Nobel | | | | | +2 | +2 | | | +2 | +2 | -2 | -2 |
| ?-1 | | | | | | | | | | | | |

Example: This teacher team is scheduled for a lesson with three single periods per week. Two of the three periods can be scheduled on Thursday and Friday, but the third period can only be scheduled by violating the time request "-3" of a teacher (something gp-Untis will never do) or by violating the condition that the subject should take place no more than once a day (depending on your weighting settings, gp-Untis *may* violate this rule; please see the chapter "Weighting" on p.106).

### Class couplings

The above rule for teacher teams also applies to class couplings, i.e. lesson couplings across classes should, if possible, always involve the same classes.

Based on the example above, class 1a in a two-class coupling

| Head group A | | | | Head group B | | | |
|---|---|---|---|---|---|---|---|
| Group 1 | | Group 2 | | Group 3 | | Group 4 | |
| 1a | 1b | 1c | 1d | 1e | 1f | 1g | 1h |

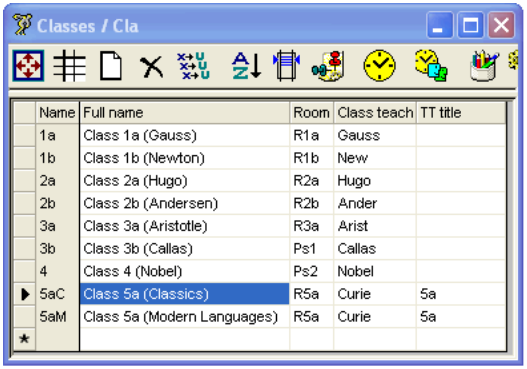
should only be coupled with class 1b; in a four-class coupling only with classes 1b, 1c and 1d.

## Type-seperated class components

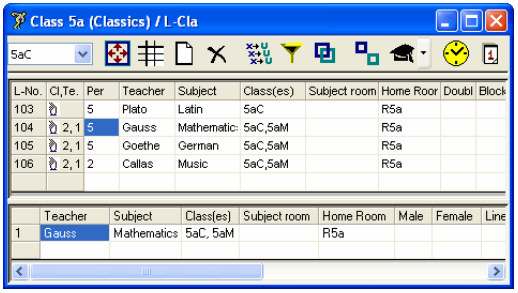
For organisational reasons, one class sometimes consists of two type-separated class components.

For example, class 5a could consist of a Modern Languages and a Classics component. While the former component has an Italian lesson scheduled, the latter component could have a Greek lesson. In this case, proceed as follows:

- Define two classes - 5aC for the Classics component and 5aM for the Modern Languages component.
- Enter the name "5a" in the "TT title" field under master data of both classes.
- Couple the two class components for all lessons attended by the students of both groups.

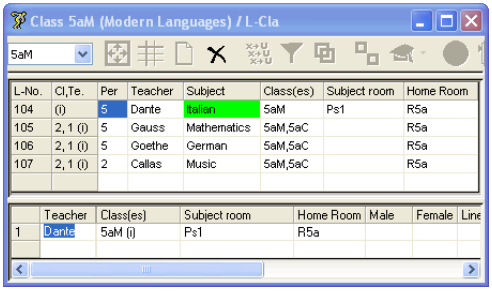



| | Name | Full name | Room | Class teach | TT title |
|---|---|---|---|---|---|
| | 1a | Class 1a (Gauss) | R1a | Gauss | |
| | 1b | Class 1b (Newton) | R1b | New | |
| | 2a | Class 2a (Hugo) | R2a | Hugo | |
| | 2b | Class 2b (Andersen) | R2b | Ander | |
| | 3a | Class 3a (Aristotle) | R3a | Arist | |
| | 3b | Class 3b (Callas) | Ps1 | Callas | |
| | 4 | Class 4 (Nobel) | Ps2 | Nobel | |
| ▶ | 5aC | Class 5a (Classics) | R5a | Curie | 5a |
| | 5aM | Class 5a (Modern Languages) | R5a | Curie | 5a |
| * | | | | | |




| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Home Roor | Doubl | Block |
|---|---|---|---|---|---|---|---|---|---|
| 103 | | 5 | Plato | Latin | 5aC | | R5a | | |
| 104 | 2, 1 | 5 | Gauss | Mathematic | 5aC,5aM | | R5a | | |
| 105 | 2, 1 | 5 | Goethe | German | 5aC,5aM | | R5a | | |
| 106 | 2, 1 | 2 | Callas | Music | 5aC,5aM | | R5a | | |

| | Teacher | Subject | Class(es) | Subject room | Home Room | Male | Female | Line |
|---|---|---|---|---|---|---|---|---|
| 1 | Gauss | Mathematics | 5aC, 5aM | | R5a | | | |




| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Home Room |
|---|---|---|---|---|---|---|---|
| 104 | (i) | 5 | Dante | Italian | 5aM | Ps1 | R5a |
| 105 | 2, 1 (i) | 5 | Gauss | Mathematics | 5aM,5aC | | R5a |
| 106 | 2, 1 (i) | 5 | Goethe | German | 5aM,5aC | | R5a |
| 107 | 2, 1 (i) | 2 | Callas | Music | 5aM,5aC | | R5a |

| | Teacher | Class(es) | Subject room | Home Room | Male | Female | Line |
|---|---|---|---|---|---|---|---|
| 1 | Dante | 5aM (i) | Ps1 | R5a | | | |

- The timetable of both class components can then be combined in a single view. In the example on the right, the combined class name 5aCM is used for all lessons attended by students of both class components (see the chapter "Timetable construction" on p.251).

qp-Untis 2007 Timetable 2007/2008 Test school DEMO
11 Valid from: 10 October For demo and test only Cla1

5a 5a

| | Mo | Tu | We | Th | Fr |
|---|---|---|---|---|---|
| 1 | 5aC Gr Plato R5<br>5aM IT Dante CR | 5aCM MA Gau R5 | 5aCM GE Goe R5 | 5aCM MA Gau R5 | 5aCM MU Cal |
| 2 | 5aCM MA Gau R5 | 5aCM GE Goe R5 | 5aCM MA Gau R5 | 5aCM MU Cal R5 | 5aC Gr Plato<br>5aM IT Dante |
| 3 | 5aCM GE Goe R5 | 5aC Gr Plato R5<br>5aM IT Dante CR | 5aC Gr Plato R5<br>5aM IT Dante CR | 5aCM GE Goe R5 | 5aCM GE Goe |
| 4 | | | | 5aC Gr Plato R5<br>5aM IT Dante CR | 5aCM MA Gau |

# Class groups

Per default setting, the gp-Untis standard software package optimizes school timetables for schools based on class structure, i.e. where each student is assigned to one particular class and the lessons scheduled for the student are determined completely by his or her class.

Another type of system involves free course choice where students can choose elective subjects (within certain limits) and classes and year groups no longer exist. This type of school system allows students to choose his or her own courses which means it is no longer the class that is the focal point of the timetabling efforts, but the student. This timetabling situation can be managed with the aid of the gp-Untis *Course Scheduling* module.

**Core and differentiation lessons**

Some school systems, such as some German Realschulen, Austrian teacher training colleges and British secondary schools, use a combination of the two extremes described above. In these schools, some lessons are attended by the entire class (core lessons, main subjects) while others represent so-called differentiation subjects (intensive lessons, minor subjects, options) that are attended by a fixed group of students from different classes. Each student's lessons are therefore determined by the student's choice of main and minor subjects.The following section describes how to deal with this timetabling situation using class groups.

**Example**

The following example demonstrates the general principles of class groups.

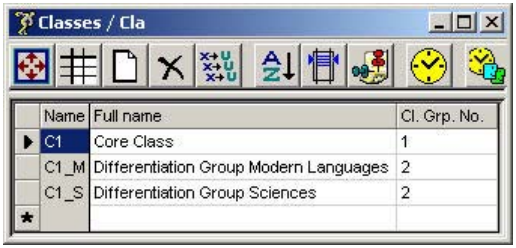
Class C1 consists of 20 students subdivided into two groups of 10 students each. One group consists of students with an interest in modern languages, the other of the students with an interest in science. All 20 students attend the same lessons for English, PE, History and Geography. However, while one group attends German, French and Italian lessons, the other group has Physics, Chemistry and Math, instead.

This means that German can be scheduled at the same time as Chemistry or Math since Modern Languages students do not attend Science classes. On the other hand, German, Chemistry and Math must not be scheduled at the same time as English or PE since these are core subjects attended by *all* the students of the class.

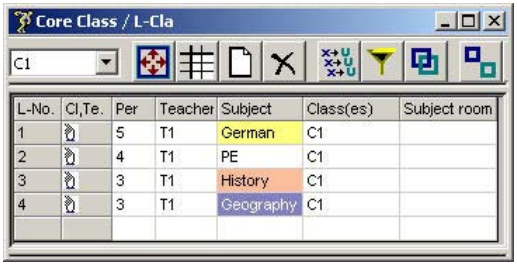
Solve this problem as follows:

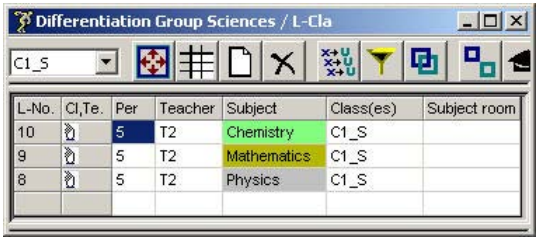
Under "Master Data | Classes", define a core class C1 and two differentiation groups C1_M (Modern Languages) and C1_S (Sciences).

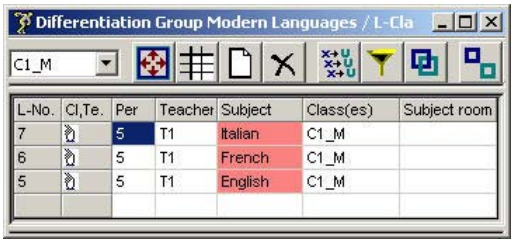
**Master Data | Classes**



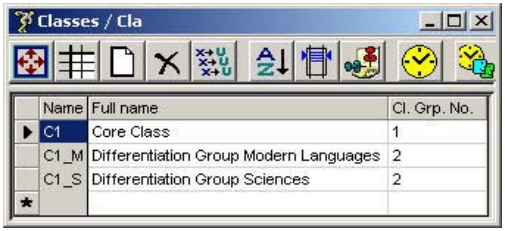

Lessons of core class C1 involves *all* of the students of the class while lessons of differentiation groups involve only the students belonging to the particular group.



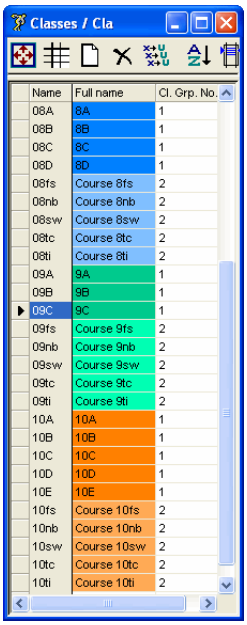
Under "Master Data | Classes", enter the information that the class groups C1_M and C1_S consist of students from core class C1 using the "Class group" code: "1" meaning that the class is a core class, numbers greater than 1 (2 - 9) refer to the different class groups.




| | Name | Full name | Cl. Grp. No. |
|---|---|---|---|
| ▶ | C1 | Core Class | 1 |
| | C1_M | Differentiation Group Modern Languages | 2 |
| | C1_S | Differentiation Group Sciences | 2 |
| * | | | |

Please note that the same class group code must be entered for both class groups C1_M and C1_S. Use higher code numbers only when the students in your school can choose more than one elective course group.

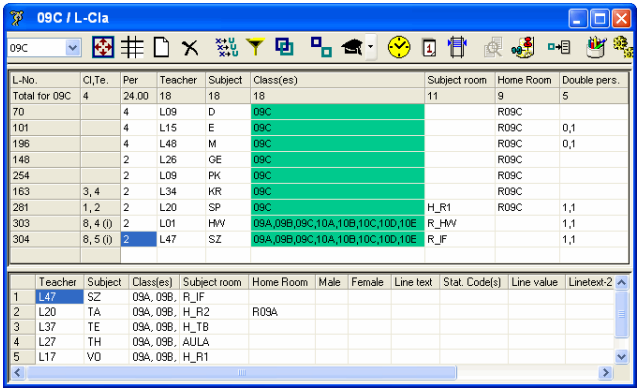
The classes of a *Realschule* in Germany




| | Name | Full name | Cl. Grp. No. |
|---|---|---|---|
| | 08A | 8A | 1 |
| | 08B | 8B | 1 |
| | 08C | 8C | 1 |
| | 08D | 8D | 1 |
| | 08fs | Course 8fs | 2 |
| | 08nb | Course 8nb | 2 |
| | 08sw | Course 8sw | 2 |
| | 08tc | Course 8tc | 2 |
| | 08ti | Course 8ti | 2 |
| | 09A | 9A | 1 |
| | 09B | 9B | 1 |
| ▶ | 09C | 9C | 1 |
| | 09fs | Course 9fs | 2 |
| | 09nb | Course 9nb | 2 |
| | 09sw | Course 9sw | 2 |
| | 09tc | Course 9tc | 2 |
| | 09ti | Course 9ti | 2 |
| | 10A | 10A | 1 |
| | 10B | 10B | 1 |
| | 10C | 10C | 1 |
| | 10D | 10D | 1 |
| | 10E | 10E | 1 |
| | 10fs | Course 10fs | 2 |
| | 10nb | Course 10nb | 2 |
| | 10sw | Course 10sw | 2 |
| | 10tc | Course 10tc | 2 |
| | 10ti | Course 10ti | 2 |

Entering the correct codes instructs the software to schedule lessons for class groups C1_M and C1_S **only** when class C1 (i.e. the core class) is not scheduled to have lessons.

The examples on the left and below and the following explanations demonstrate the situation in a German Realschule.




| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject room | Home Room | Double pers. |
|---|---|---|---|---|---|---|---|---|
| Total for 09C | 4 | 24.00 | 18 | 18 | 18 | 11 | 9 | 5 |
| 70 | | 4 | L09 | D | 09C | | R09C | |
| 101 | | 4 | L15 | E | 09C | | R09C | 0,1 |
| 196 | | 4 | L48 | M | 09C | | R09C | 0,1 |
| 148 | | 2 | L26 | GE | 09C | | R09C | |
| 254 | | 2 | L09 | PK | 09C | | R09C | |
| 163 | 3, 4 | 2 | L34 | KR | 09C | | R09C | |
| 281 | 1, 2 | 2 | L20 | SP | 09C | H_R1 | R09C | 1,1 |
| 303 | 8, 4 (i) | 2 | L01 | HW | 09A,09B,09C,10A,10B,10C,10D,10E | R_HW | | 1,1 |
| 304 | 8, 5 (i) | 2 | L47 | SZ | 09A,09B,09C,10A,10B,10C,10D,10E | R_IF | | 1,1 |

| | Teacher | Subject | Class(es) | Subject room | Home Room | Male | Female | Line text | Stat. Code(s) | Line value | Linetext-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | L47 | SZ | 09A, 09B, | R_IF | | | | | | | |
| 2 | L20 | TA | 09A, 09B, | H_R2 | R09A | | | | | | |
| 3 | L37 | TE | 09A, 09B, | H_TB | | | | | | | |
| 4 | L27 | TH | 09A, 09B, | AULA | | | | | | | |
| 5 | L17 | VO | 09A, 09B, | H_R1 | | | | | | | |

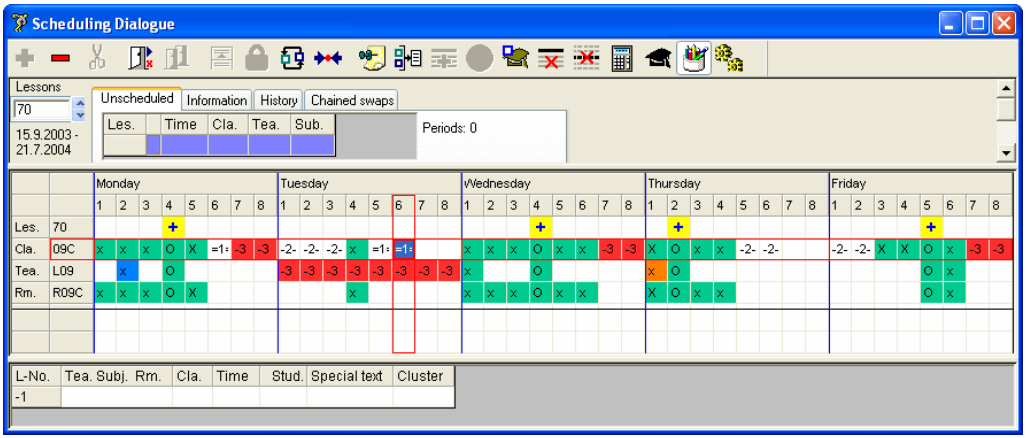
Take a look at year 9: Each student of this year is assigned to one of the core classes 09A, 09B or 09C and attends undifferentiated core class lessons. Each class is therefore marked with the class group code "1".

The classes 09fs – 09ti highlighted in light green (full name "Course" in the above figure) are the differentiation groups (fs: French, ti: IT). Each student of core classes 09A - 09C can choose one of the elective subject groups 09fs – 09ti. Each class group is marked with the class group code "2".

**Important!**

Please note when using class groups that the order in which classes are listed under "Master Data | Classes" is **not arbitrary**. Core and differentiation classes of any one year must be listed in sequence, i.e. one below the other. A class group coded with a class group code *smaller* than that of the class listed immediately above denotes the beginning of a new, totally separate class sequence with completely different details (see the example above, e.g. between 08ti and 09A, or between 09ti and 10A.

Lessons of classes coded with a class group code are marked as such in the scheduling dialogue. See the example below.

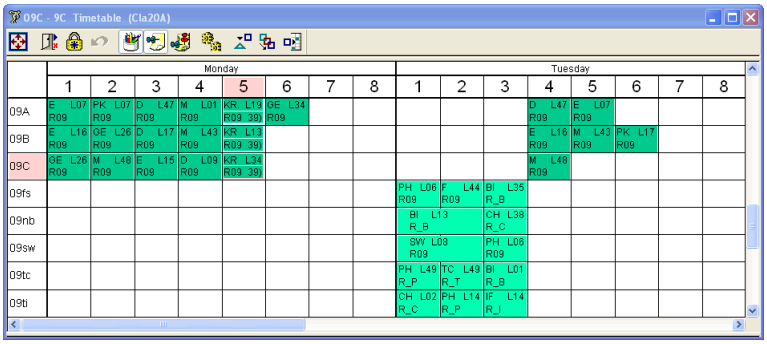


The symbol "=1=" on Tuesday, period 6, in the row of class 09A means that a class with the same class group code "1" is scheduled at the same time. (For this reason, a lesson should be scheduled for class 09A in this period, if possible).

Tuesday, period 1, contains the symbol "-2-". This means that a lesson has already been scheduled for a class with the class group code "2" and that it is **not possible** to schedule a lesson for class 09A at this time **without creating a clash**.

Please also note that the additional class row for 09ti, which has a different class group code from that of class 09A, shows the complementary entries to class 09A: Mon-1 to Mon-6 are coded "-1-" for 09ti (scheduling not possible due to code "1"). Tue-1 to Tue-3, scheduled for 09ti, are coded "-2-" for 09A (scheduling not possible due to code "2").

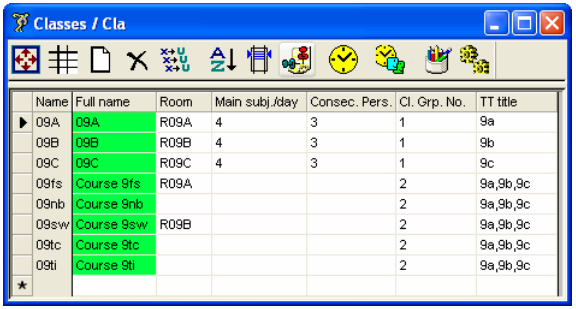
Overview of core and differentiation lessons




The timetables of core and differentiation classes can be displayed neatly and clearly using overview timetable format 20.

Print the core and differentiation lessons of a class on a single timetable by accessing the master data field "TT title".

Please note that gp-Untis version 2006 and later allow you to assign several different master classes to a class. The following example demonstrates the advantages of that option.




| | Name | Full name | Room | Main subj./day | Consec. Pers. | Cl. Grp. No. | TT title |
|---|---|---|---|---|---|---|---|
| ▶ | 09A | 09A | R09A | 4 | 3 | 1 | 9a |
| | 09B | 09B | R09B | 4 | 3 | 1 | 9b |
| | 09C | 09C | R09C | 4 | 3 | 1 | 9c |
| | 09fs | Course 9fs | R09A | | | 2 | 9a,9b,9c |
| | 09nb | Course 9nb | | | | 2 | 9a,9b,9c |
| | 09sw | Course 9sw | R09B | | | 2 | 9a,9b,9c |
| | 09tc | Course 9tc | | | | 2 | 9a,9b,9c |
| | 09ti | Course 9ti | | | | 2 | 9a,9b,9c |
| * | | | | | | | |

The differentiation lessons of class groups 09fs, 09nb, 09sw, 09tc and 09ti are elective lessons for all students of core classes 09A, 09B and 09C. The three master class designations allow you to print complete timetables of all core classes including differentiation groups quickly and easily.

9C 9C

| | Mo | Tu | We | Th | Fr |
|---|---|---|---|---|---|
| 1 | 09C GE L26 R09C | 09fs. PH L06 R09A<br>09nb BI L13 R BI<br>09s SW L08 R09B<br>09tc PH L49 R PH<br>09ti CH L02 R_CH | 09C PK L09 R09C | 09C. KR L34 R09C<br>09A ER L25 R08A | 09fs. CH L11 R CH<br>09nb BI L13 R BI<br>09s SW L08 R09B<br>09tc CH L40 R08E<br>09ti IF L14 R_IF |
| 2 | 09C M L48 R09C | 09fs. F L44 R09A<br>09nb BI L13 R BI<br>09s SW L08 R09B<br>09tc TC L49 R TC<br>09ti PH L14 R PH | 09C E L15 R09C | 09C D L09 R09C | 09fs. F L44 R09A<br>09nb CH L38 R CH<br>09s BI L01 R_BI<br>09tc TC L49 R TC<br>09ti BI L18 R BI |
| 3 | 09C E L15 R09C | 09fs. BI L35 R BI<br>09nb CH L38 R_CH<br>09s PH L06 R09B<br>09tc BI L01 R_BI<br>09ti IF L14 R IF | | 09C M L48 R09C | 09C. SP L20 H_R1<br>09C SP L37 H R2 |
| 4 | 09C D L09 R09C | 09C M L48 R09C | 09C D L09 R09C | 09C E L15 R09C | |
| 5 | 09C. KR L34 R09C<br>09A ER L25 R08A | | 09C M L48 R09C | 09fs. F L44 R09A<br>09nb PH L06 R PH<br>09s CH L22 R_CH<br>09tc TC L49 R TC<br>09ti IF L14 R_IF | 09C D L09 R09C |
| 6 | | | 09C GE L26 R09C | 09fs. F L44 R09A<br>09nb BI L13 R BI<br>09s SW L08 R09B<br>09tc TC L49 R_TC<br>09ti IF L14 R IF | 09C PK L09 R09C |

# Room logic

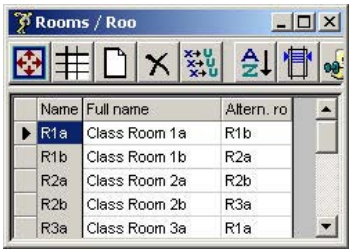
The following chapter is devoted to the treatment of rooms. Special attention will be placed on the difference between (subject) rooms and home rooms and how and why the optimisation software assigns a particular room to a lesson.

## Alternative rooms

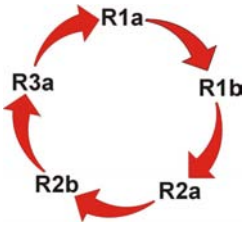
Since rooms are usually a scarce resource when it comes to timetable construction, gp-Untis provides the additional option of assigning an alternative room. Alternative rooms are equivalent to the home room in size and function. During optimisation, gp-Untis can therefore allocate an alternative room instead of the desired home room. It is the subsequent "Room optimisation" function that is responsible for allocating the desired room to a lesson, if possible.

### Alternative room ring

Since each alternative room can have its own alternative room, you




**Alternative room ring**




can create entire alternative room rings by entering the original home room as the alternative room of the last alternative room in the chain. The example below shows such an alternative room ring.
gp-Untis can allocate either one of the 5 rooms, depending on which would improve the optimisation results most. Both the optimisation and the room optimisation tools take into consideration the order in which the rooms are entered – an important criteria in the following two scenarios.

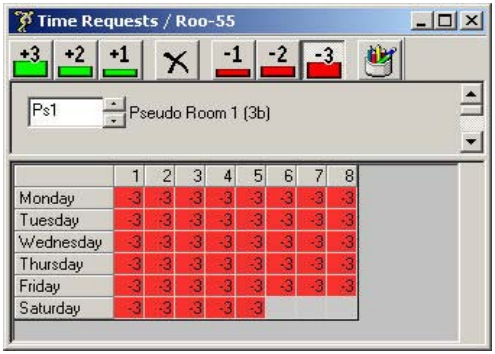
You can either recreate "geographic" aspects of your school by ensuring that the alternative room order reflects the relative locations of the rooms in the school. This would save teachers and students from wasting precious time when moving from room to room. In an alternative room ring, neighbouring rooms should therefore be listed in sequence.

Another option is to use alternative room rings and chains to place the function of the rooms in context. When a room capacity has been defined for individual rooms under master data, you can list alternative rooms with approximately the same capacity in sequence (in an alternative room ring). Another aspect that could influence the order of rooms in alternative room rings is the equipment provided in the individual rooms.

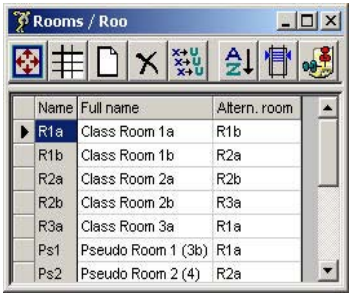
### Classes without a designated room

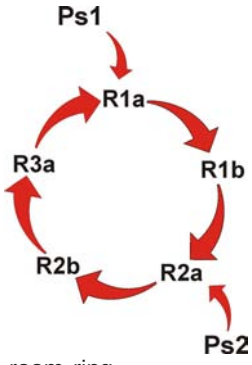
If your school has classes without designated rooms, you can use pseudo rooms by assigning a fictitious room to a class. You can then block this room by entering the time request "-3" for every period of the week.

Enter a room from the classroom ring as an alternative room for your pseudo room. gp-Untis will now select a suitable classroom for the class (see example).




Time requests for pseudo rooms




Including pseudo rooms in an alternative room ring

## Room allocation

gp-Untis offers three different methods of allocating rooms:

1. *Manual* room allocation in the scheduling dialogue, on the scheduling timetable or on the timetable (see the chapter "Manual timetabling" on p.160)
2. *Automated* room allocation during optimisation
3. *Optimized* room allocation during room optimisation

The automated room allocation function during optimisation can only allocate one of the permitted rooms entered for the specific lesson, i.e. a subject room or a designated alternative room. When the lesson has no designated subject room, the optimisation tool allocates the home room entered for the lesson (or one of its alternative rooms).

In theory, this would mean that each lesson could be scheduled in a different room and that classes would have to change rooms every period. In practice, the room optimisation tool (see relevant chapter below) tries to prevent this from happening.

gp-Untis may even schedule a lesson for a period where a suitable room is unavailable. The lesson is then displayed in the diagnosis window under "Subject room missing".

To suppress this behaviour, set the room weighting of the specialist subject room to "4" (under master data) and the slider for "Optimisation of room allocation" in the weighting dialogue ("Scheduling | Weighting") on the "Rooms" tab to position 4 or 5 ("very important" or "extremely important"). Periods for which the optimisation tool is unable to find a suitable room will then remain unscheduled.

## Room capacity

When room sizes and/or class sizes at your school differ widely, set the optimisation and the room optimisation tools to consider the capacity of individual rooms in order to prevent situations where a small class occupies a room suitable for twice the number of students or a large class is crammed into a small room designed for a much smaller number of students.

To ensure the proper functioning of the room capacity function, enter the following details (see also the chapters "Master Data" and "Lessons"):

Under "Master Data | Rooms"

- Capacity

Under "Master Data | Classes"

- Students (Male, Female)

For couplings under "Lessons"

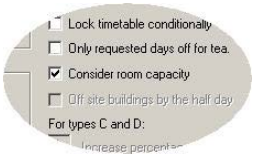
- Students (Male, Female)

### Alternative room chain

If you want the room optimisation tool to consider the room capacity of alternative rooms, the alternative room ring must remain open, i.e. you need to create an alternative room chain, instead. Please see the following example.




The example shows that room R3a has a capacity for 22 persons. When this room is unavailable, the next suitable room for this lesson is the slightly larger room R2a. The next room in the chain is the even larger room R2b etc. The alternative room for R1a is R1b, and the chain ends here because R3a with its lower capacity is unsuitable as an alternative room for R1b.




### Room capacity and optimisation

If you want the room capacity to be taken into consideration, tick the relevant box in the optimisation or room optimisation dialogue before starting an optimisation or room optimisation run.

Specify the level of importance of the room capacity function by adjusting the "Consider room capacity" weighting in the weighting dialogue ("Scheduling | Weighting") on the "Rooms" tab.

## Room optimisation

The room optimisation tool attempts to optimize the already optimized timetable by finding the most suitable room available for each lesson. The software obeys the following rules:

- Lesson periods **will not** be moved.
- Double periods (or period blocks) take place in the same room, if possible.

**Specialist subject room**

- When the software is unable to schedule all of the periods of a subject in the designated subject room, gp-Untis tries to ensure that all classes have the same number of lessons scheduled in the subject room (e.g. if the school has 34 classes and only one Physics lab, gp-Untis tries to ensure that each class has at least one period in the specialist subject room).

**Home room**

- When the optimisation tool is unable to schedule a lesson in a designated alternative room, the room optimisation function ensures that the lesson takes place in the designated home room, instead.

**Classes without a designated room**

- The software attempts to allocate the same room to a class (or teacher) for the duration of an entire half-day. This is of particular importance for classes without a designated room. These should be allocated with the aid of pseudo rooms.
- Preference is given to alternative rooms listed close to the designated room in the alternative room chain.

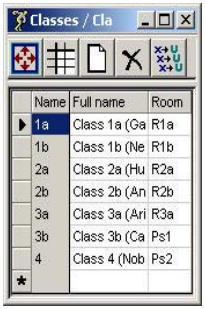
- The rooms specified in a "Lessons" window take precedence over alternative rooms. This is of particular importance for classes without a designated room. A class without a designated room must never displace another class from its designated home room and can only be scheduled for a home room that is readily available.
- When a lesson is marked "(r) All periods in the same room" (on the "Codes" tab under "Lessons | Teachers" or "Lessons | Classes"), the room optimisation tool attempts to schedule all the periods of the lesson in the same room while at the same time taking the room capacity into account. Rooms that are not designated home rooms are allocated first, and preferentially to double periods and period blocks.

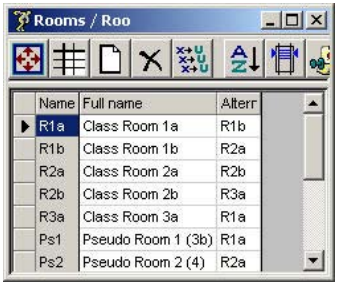
**Example**

The following example demonstrates the function of the room optimisation tool:

1. Open the file *demo1.gpn*.

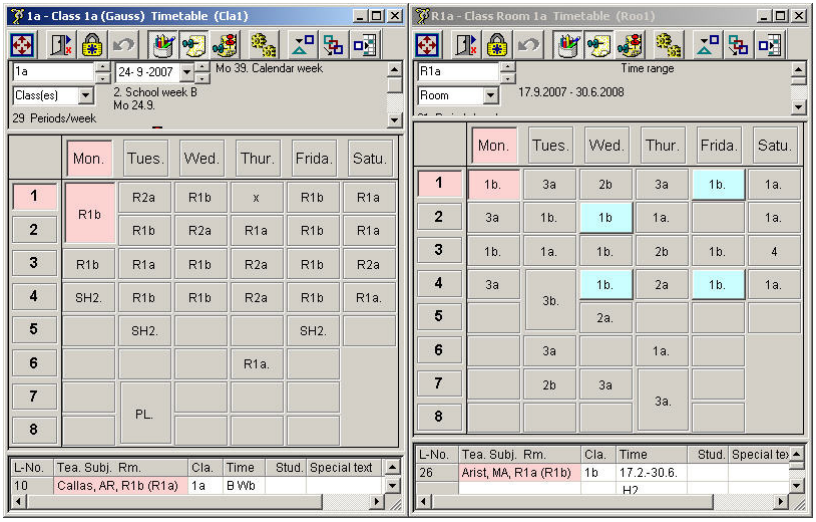
Seven classes are listed under "Master Data | Classes". The column "Room" in the grid view shows that a pseudo room has been assigned to the last two classes (3b and 4). This means that these two classes do not have a designated room of their own. View the alternative rooms under "Master Data | Rooms". The alternative room ring is the same as in the example on p. 278. The alternative rooms allocated to the two pseudo rooms are R1a and R2a.



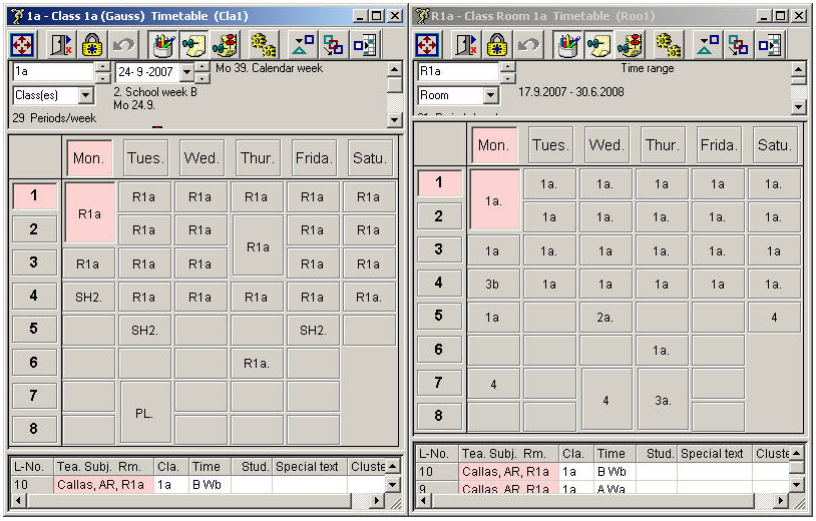




2. A class timetable should already be open. Open another timetable window via "Timetable | Rooms".

**Before room optimisation**




**After room optimisation**

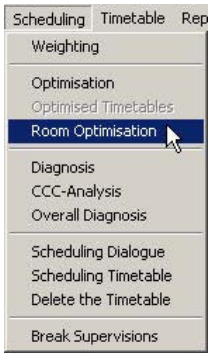


A number of columns in the class timetable may be marked "Before school starts". Select the next week in the date selection box of the timetable window to display the timetable for the days you want to view.

❸ On the class timetable, click several times on <Other element in period> until the rooms details are displayed. Repeat the same process for the room timetable until each period displays the class scheduled to have lessons in the room.



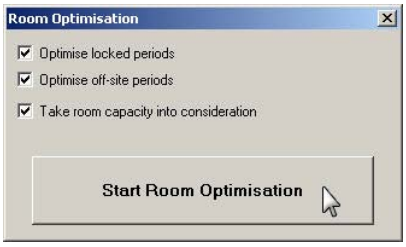

Inspect the timetable of a class and of its home room. The examples on the previous page show class 1a and its home room R1a. As you can see, the class is not always scheduled to have lessons in its home room because the room is occasionally occupied by other classes.




The entry "x" (e.g. Thursday, period 1, on the class timetable in the example) denotes periods for which no room has been allocated.

❹ Select the menu item "Scheduling | Room Optimisation".

The room optimisation dialogue appears where you can specify if you want to optimize locked and/or off-site rooms and if the room capacity should be taken into consideration.




❺ Click on <Start Room Optimisation>. Click on the button again when the room optimisation run is finished.

As you can see, the room optimisation tool has allocated the home room (R1a) for most of the lessons of class 1a and the designated subject room (PE and Design) for some of the lessons.

Please note the situation for classes without a designated room. Before the room optimisation, class 3b was scheduled to have lessons in room R1a on Tuesday, periods 4 and 5. Class 4 was scheduled for room R1a on Saturday, period 4. The room optimisation tool moved both classes to another room since the placement violated the rule that a class must not be displaced from its home room.

After the room optimisation run, the situation is very different. Class 1a is back in its home room on Tuesday, period 4 and 5, and on Saturday, period 4. Instead, class 3b occupies room R1a on Monday, period 4, when class 1a is scheduled to have a PE lesson in the sports hall. Class 4 is scheduled in R1a on Saturday, period 5, because again, the room is not required by class 1a.

Any periods not yet allocated to a suitable room (as is often the case for classes without a designated room) can be assigned manually using the scheduling dialogue.

Finally, two frequently asked questions:

*When is the best time to start the room optimisation?*

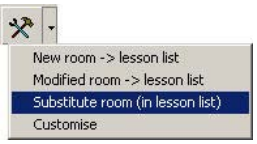
Start the room optimisation **after** you have finished scheduling periods, but **before** you start allocating rooms manually (if at all).

*What is the difference between the optimisation and the room optimisation tool when it comes to room allocation?*

In contrast to the room optimisation tool, the optimisation function **ignores** the rules that:

- double periods should be scheduled in the same room,
- specialist subject rooms should be evenly distributed between classes,
- the specified room should be allocated in preference to its alternative room, and
- the home room should be scheduled when the desired specialist subject room is unavailable.

## Changing home rooms for classes and teachers

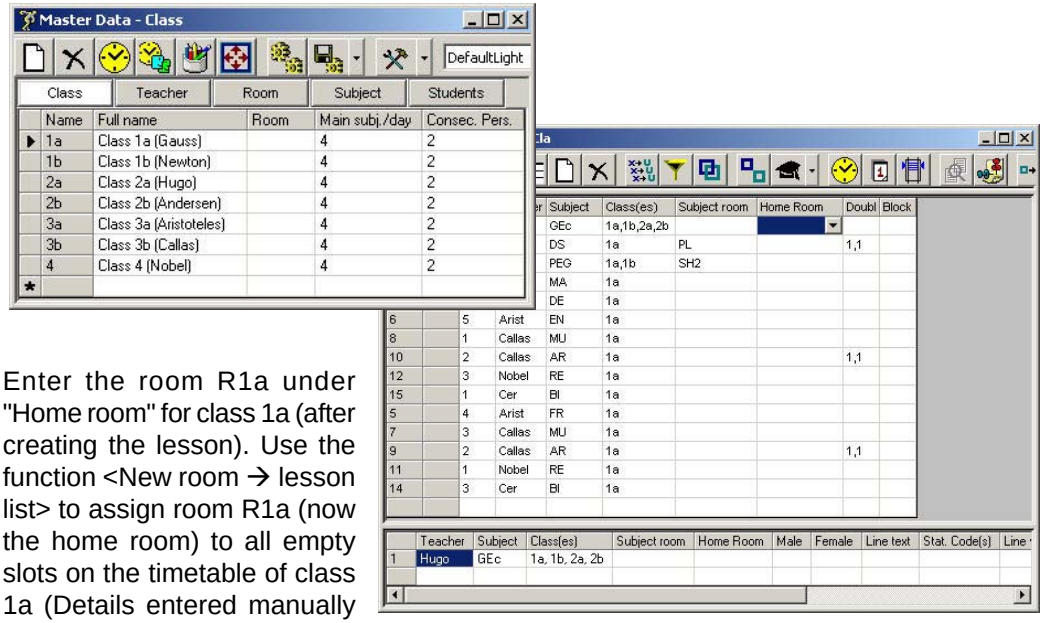



You can change the home rooms for classes and teachers by clicking on <Special functions> in the "All Master Data" window. Three different options are available. The following example demonstrates the differences between the three options.

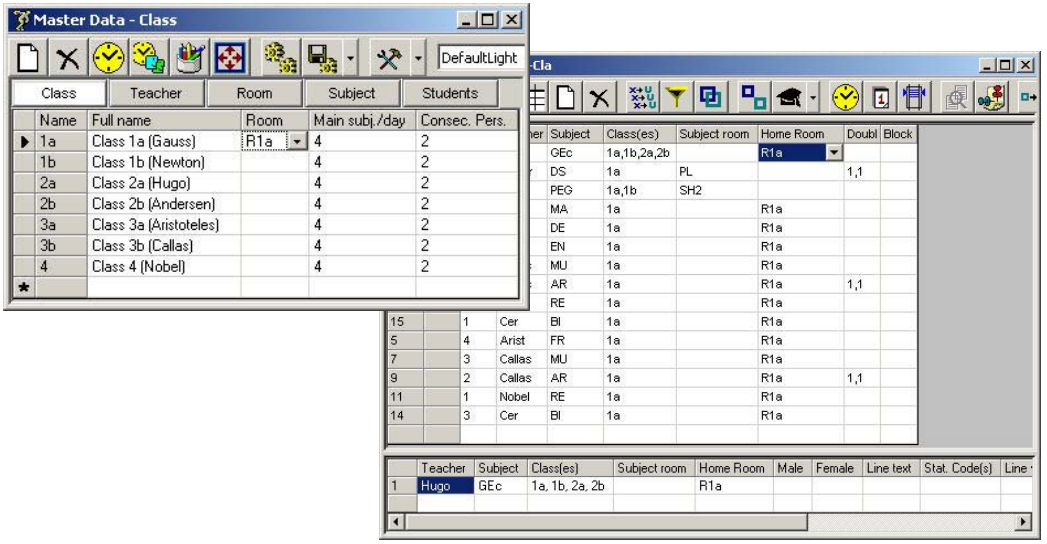
### Entering new home rooms

**Example**

Class 1a has not been assigned a designated home room yet. The "Home room" cell in the lesson window of class 1a is therefore empty.



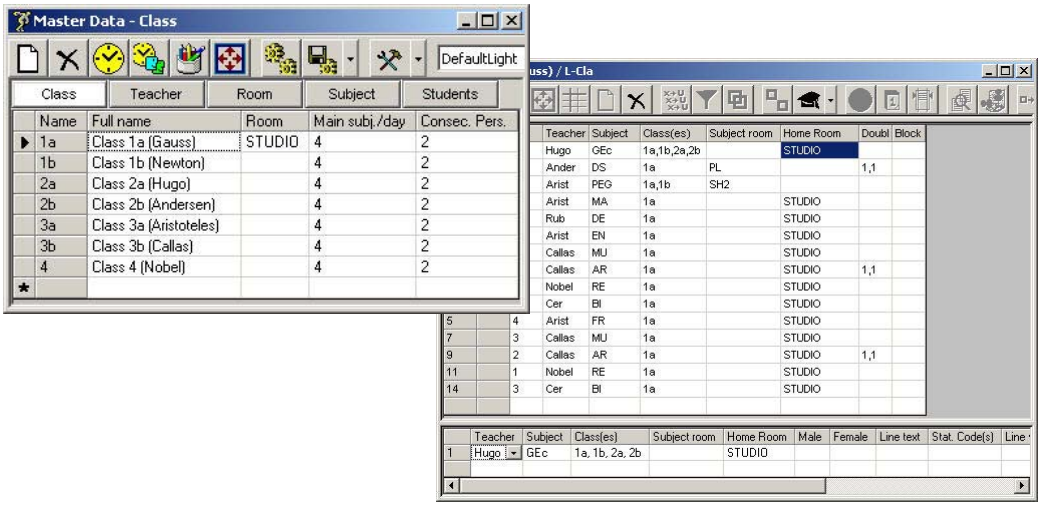

Enter the room R1a under "Home room" for class 1a (after creating the lesson). Use the function <New room → lesson list> to assign room R1a (now the home room) to all empty slots on the timetable of class 1a (Details entered manually under "Lessons | Classes" remain unchanged as the new home room is only entered into empty cells in the lesson view).




## Replacing changed home rooms

**Example**

Based on the following example, you want to change the home room of class 1a from R1a to the room STUDIO. Change the details accordingly (under "Master Data" of class 1a). At this point, the lesson window display still shows room R1a as the home room of class 1a.

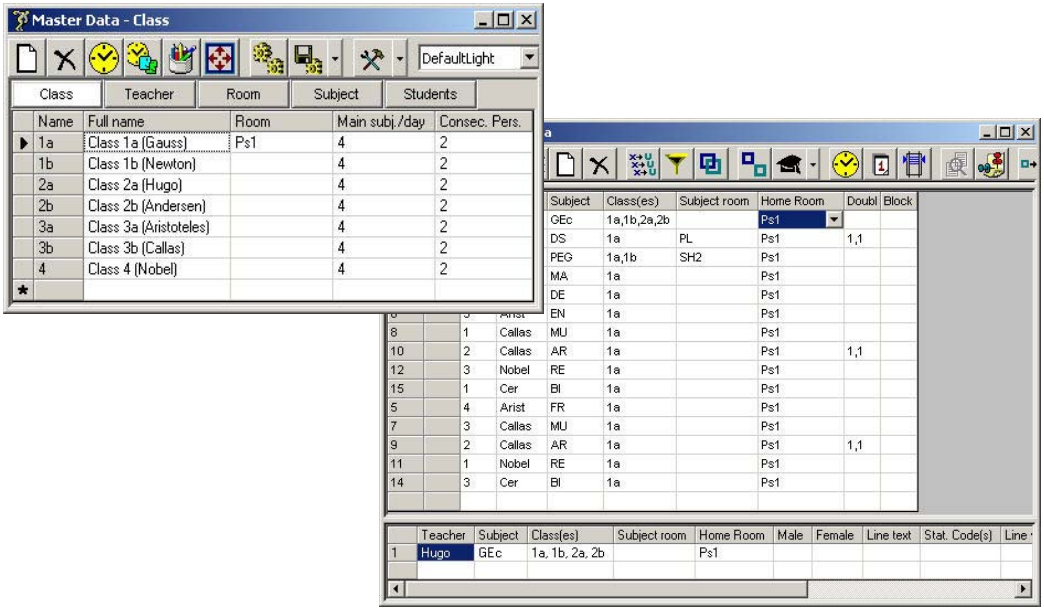


The function <Modified room → lesson list> replaces the home room R1a with the room STUDIO for the lessons of class 1a (but only for those lessons which have "R1a" entered as their home room).

### Overwriting home rooms

**Example**

After some time, you decide to replace the home room STUDIO from the previous example with the room PSEUDOROOM1 for all the lessons of class 1a (including coupled lessons). Use the function <Substitute room (in lesson list)> to allocate PSEUDOROOM1 as the new home room for all the lessons of class 1a, i.e. not only to empty cells (compare the function <New room → lesson list>) or to cells containing a specific room <Modified room → lesson list>.



## Off-site rooms

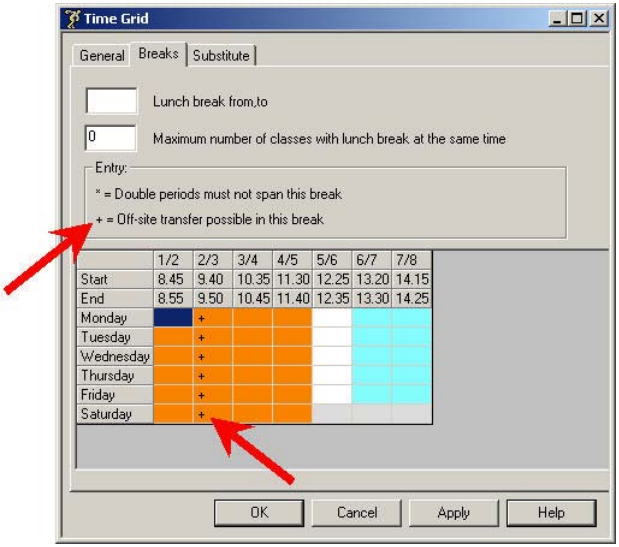
Off-site rooms are specialist subject rooms and classrooms located at such a distance from the main school building that a whole period needs to be set aside to allow teachers and students to reach the rooms. The automated optimisation function takes the length of the walking time into account when optimizing the timetable.

**Example**

A PE teacher is scheduled to teach periods 1 and 5 in the main building and period 3 at the (off-site) sports track. The timetabling tool will ensure that periods 2 and 4 remain unscheduled for the teacher to allow him or her sufficient time to reach the sports track.

### Breaks of different lengths

Many schools use timetables where some breaks are longer than others and where it is therefore possible to reach an off-site location during one of the longer breaks. Breaks of sufficient length to reach an off-site location can be marked "+" in the time grid under "Breaks".




The "Breaks" time grid tab

The time grid above shows that the 20-minute break between periods 2 and 3 is sufficiently long enough to reach the off-site location. The PE teacher in the example above would therefore be able to teach period 2 in the main building and still manage to reach the sports track in time for period 3.

### Start time graduation

Instead of wasting an entire period to reach an off-site location, the start time of certain lessons can be adjusted slightly to suit the situation.

**Example**

| Start of period - main building | | Start of period - off-site building |
|---|---|---|
|  | Walking time 15 Minutes |  |
| Period 1: **0800hrs** | | Period 1: **0815hrs** |
| Period 2: **0900hrs** | | Period 2: **0915hrs** |
| Period 3: **1000hrs** | | Period 3: **1015hrs** |
| Etc... | | Etc... |

Using this method, the PE teacher from the previous example can be scheduled to teach periods 1, 2 and 5 in the main building and period 3 at the off-site sports track. The software schedules a free period for period 4 to allow the teacher sufficient time to return to the main building after period 3.

## Off-site codes

Off-site rooms are marked with an *off-site code* entered under master data.

### Off-site rooms with graduated lesson starts

Enter the same (numerical) off-site code for all the rooms at an off-site location where you operate a system of *start time graduation*. The permitted values are between 1 and 9.

| | | Main building | Walk. time | Off-site building 1 | Walk. time | Off-site building 2 |
|---|---|---|---|---|---|---|
| | |  | 15 minutes |  | 10 minutes |  |
| **Off-site code** | | none | | 1 | | 2 |
| **Start of per.** | 1. Per. | 08:00 | | 08:15 | | 08:25 |
| | 2. Per. | 09:00 | | 09:15 | | 09:25 |
| | 3. Per. | 10:00 | | 10:15 | | 10:25 |
| | 4. Per. | 11:00 | | 11:15 | | 11:25 |

**Example**

Your school has two off-site locations. The first is a 15 minute walk away from the main building, the second a 10-minute walk away from the first off-site location. Enter a value for each off-site room as described above to enable gp-Untis to schedule the teacher as follows:

Period 1 – main building, Period 2 – off-site location 1, Period 3 – off-site location 2.

The software allocates one free period for the return from one of the off-site buildings to the main building or from off-site location 2 to off-site location 1.

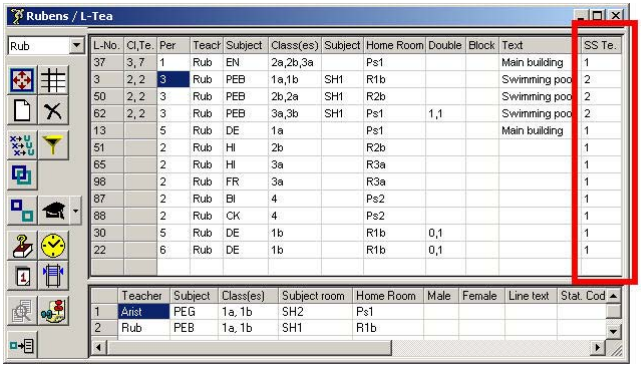
gp-Untis takes into account:

- The walking times for teachers and students to off-site subject rooms and classrooms
- The walking times for teachers and students from off-site subject rooms and classrooms back to the main building

It is advisable to reduce the number of times teachers and students are obliged to move between main and off-site buildings to an absolute minimum. The following example shows how to do this:

**Example**

For teachers who teach both in the main building and at off-site locations, enter the number "1" under "Subject sequence - Teachers" for lessons that take place in the main building, and the number "2" for lessons that take place in the off-site building.




Subject sequence code

gp-Untis will then attempt to schedule as many periods as possible in the same building for the teacher.

### Off-site rooms without graduated lesson starts

If you are unable to graduate lesson starts as described in the previous section, you need to schedule one free period each for the walk to and from the off-site location for teachers and students.

Instruct the software accordingly by entering off-site codes A – E for the off-site rooms.

To ensure the correct treatment of off-site rooms during optimisation, enter the following details:

**Note**

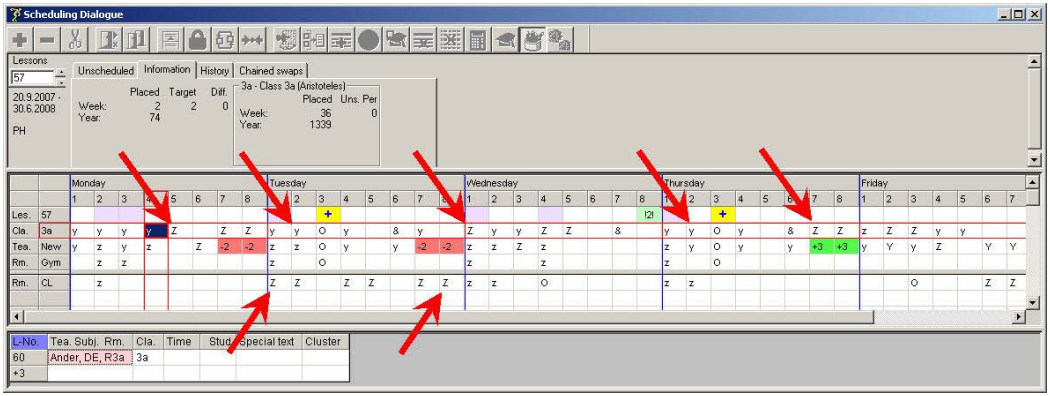
Under "Master Data | Rooms"

- Off-site code
- Room weighting

Under "Scheduling | "Weighting | Rooms"

- Optimisation of room allocation
- Optimisation of the off-site rooms

Periods scheduled for rooms with off-site code "1" are marked y and Y in the scheduling dialogue. Periods scheduled for rooms with other off-site codes are marked z and Z (upper case letters denote couplings).




The scheduling dialogue with different off-site markers

# Main subjects

Subjects that are considered particularly strenuous or important for students can be marked with the "Main subject" code. This allows the optimisation tool to observe the following restrictions:

- Maximum number of main subjects that may be scheduled for a class per day
- Maximum number of main subjects that may be scheduled in sequence for a class
- Maximum number of main subjects that may be scheduled to take place after a defined boundary period

To ensure the correct treatment of main subjects during optimisation, enter the following details:

Under "Weighting | Main Subjects"

- Respect max. number of main subjects per day for classes
- Respect max. number of consecutive main subjects for classes
- Boundary period
- Main subjects max. once after boundary period
- Main subject at least once up to boundary period

**Note**

Please see a detailed description of the boundary period function under "Weighting parameters" on p.112.

Under "Master Data | Subjects"

- Code (M) Main subject

Under "Master Data | Classes"

- Max. main subjects per day
- Max. consecutive main subjects per day

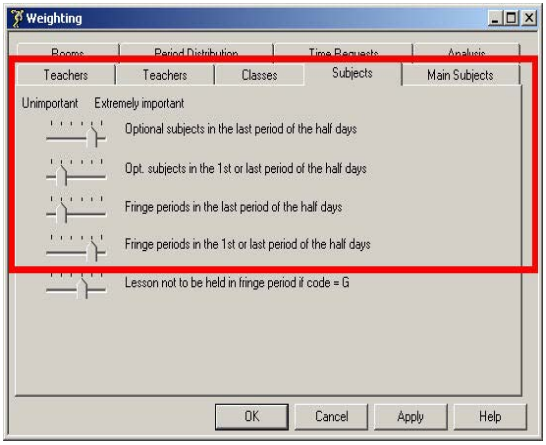
# Fringe periods and optional subjects

Not every subject is attended by every student of a class. When this is the case, it may be desirable to schedule such subjects at the beginning or the end of a half-day (in the so-called fringe periods) to enable students who do not take part in the subject to come to school later or leave school early or have a longer lunch break.

To enable the software to schedule subjects in fringe periods, mark the subject with the code "Optional subject" or "Fringe period" (under "Master Data | Subjects"). The two codes have the same function, but can have different weighting settings.

**Example**

The following weighting settings instruct the software to schedule optional subjects preferentially in the *last* periods of a half-day and fringe period subjects either in the first *or* the last periods.




**Code G**

Code G has the opposite effect. Subjects marked "(G) Not a fringe period" are not scheduled in fringe periods.

# Subject sequences

Subject sequence codes can be entered for subjects and lessons. Subject sequence codes entered for subjects apply to the entire school; codes entered for lessons only apply to the classes and teachers involved in the lesson.

## Positive subject sequence

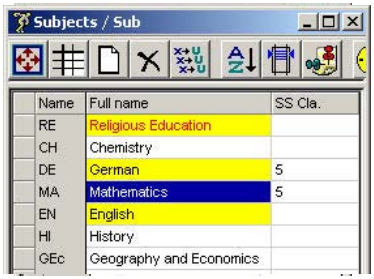
### Classes

It may be desirable for pedagogical or organisational reasons to schedule certain subjects in sequence.

**Example**

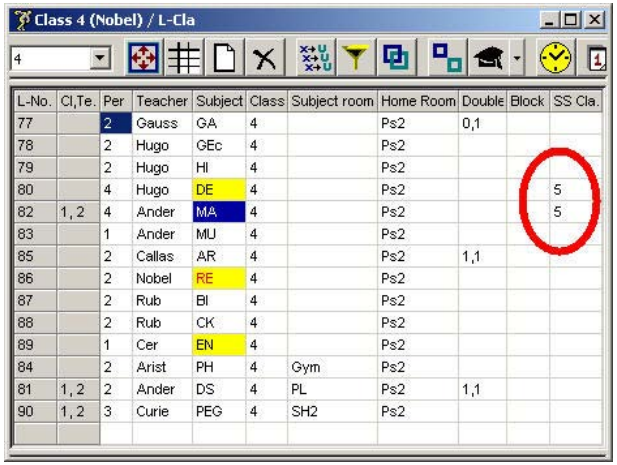
For example, to allow time for a two-period written exam, you want to schedule the subjects German (DE) and Math (MA) in sequence. It is irrelevant in this case if the sequence is DE-MA or MA-DE.

Version 1
*Applies to the entire school*
Enter the same numerical subject sequence code (under "Master Data | Subjects") for both subjects, e.g. "5" (see example on the right).




| Name | Full name | SS Cla. |
|---|---|---|
| RE | Religious Education | |
| CH | Chemistry | |
| DE | German | 5 |
| MA | Mathematics | 5 |
| EN | English | |
| HI | History | |
| GEc | Geography and Economics | |

Version 2
*Applies to a particular class (e.g. class "4")*
Enter a numerical subject sequence code (under "Lessons | Classes") in the relevant lesson rows for class 4, e.g. "5" (see example on the right).



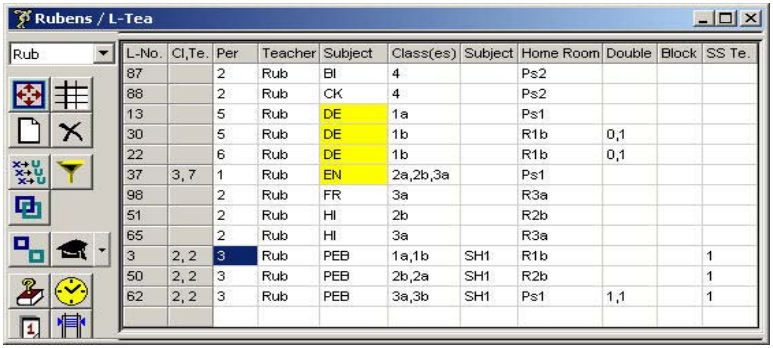

| L-No. | Cl,Te. | Per | Teacher | Subject | Class | Subject room | Home Room | Double | Block | SS Cla. |
|---|---|---|---|---|---|---|---|---|---|---|
| 77 | | 2 | Gauss | GA | 4 | | Ps2 | 0,1 | | |
| 78 | | 2 | Hugo | GEc | 4 | | Ps2 | | | |
| 79 | | 2 | Hugo | HI | 4 | | Ps2 | | | |
| 80 | | 4 | Hugo | DE | 4 | | Ps2 | | | 5 |
| 82 | 1, 2 | 4 | Ander | MA | 4 | | Ps2 | | | 5 |
| 83 | | 1 | Ander | MU | 4 | | Ps2 | | | |
| 85 | | 2 | Callas | AR | 4 | | Ps2 | 1,1 | | |
| 86 | | 2 | Nobel | RE | 4 | | Ps2 | | | |
| 87 | | 2 | Rub | BI | 4 | | Ps2 | | | |
| 88 | | 2 | Rub | CK | 4 | | Ps2 | | | |
| 89 | | 1 | Cer | EN | 4 | | Ps2 | | | |
| 84 | | 2 | Arist | PH | 4 | Gym | Ps2 | | | |
| 81 | 1, 2 | 2 | Ander | DS | 4 | PL | Ps2 | 1,1 | | |
| 90 | 1, 2 | 3 | Curie | PEG | 4 | SH2 | Ps2 | | | |

### Teachers

You can also enter subject sequence requests for teachers. This is a useful function for subjects that require elaborate experiments to be set up. For example, a teacher who teaches Physics to three different classes of the same year may request to have these lessons scheduled in sequence to allow him to show the same experiment several times in a row.

Another example involves teachers who teach PE plus another subject. The PE lessons should, if possible, be scheduled in sequence so that the teacher is not obliged to change into PE clothes several times a day.

In both cases, enter the same numerical subject sequence code for the lessons you want to schedule in sequence (under "Subject sequence - Teachers").



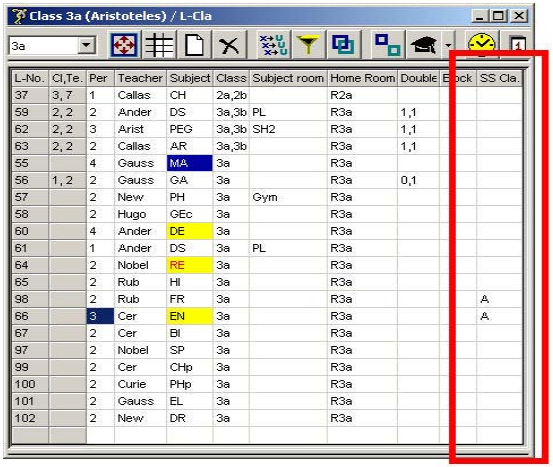

| L-No. | Cl,Te. | Per | Teacher | Subject | Class(es) | Subject | Home Room | Double | Block | SS Te. |
|---|---|---|---|---|---|---|---|---|---|---|
| 87 | | 2 | Rub | BI | 4 | | Ps2 | | | |
| 88 | | 2 | Rub | CK | 4 | | Ps2 | | | |
| 13 | | 5 | Rub | DE | 1a | | Ps1 | | | |
| 30 | | 5 | Rub | DE | 1b | | R1b | 0,1 | | |
| 22 | | 6 | Rub | DE | 1b | | R1b | 0,1 | | |
| 37 | 3, 7 | 1 | Rub | EN | 2a,2b,3a | | Ps1 | | | |
| 98 | | 2 | Rub | FR | 3a | | R3a | | | |
| 51 | | 2 | Rub | HI | 2b | | R2b | | | |
| 65 | | 2 | Rub | HI | 3a | | R3a | | | |
| 3 | 2, 2 | 3 | Rub | PEB | 1a,1b | SH1 | R1b | | | 1 |
| 50 | 2, 2 | 3 | Rub | PEB | 2b,2a | SH1 | R2b | | | 1 |
| 62 | 2, 2 | 3 | Rub | PEB | 3a,3b | SH1 | Ps1 | 1,1 | | 1 |

Subject sequence for teachers

## Negative subject sequence

On the other hand, it may be desirable to prevent specific subject sequences. If this is the case, simply enter an alphabetic subject sequence code (letter from A to F). The optimisation tool will take into account that lessons with the same alphabetic subject sequence code should not be scheduled in sequence.

Example: For pedagogical reasons, the Modern Languages subjects German (DE) and French (FR) should not be scheduled in sequence for class 3a. Enter the letter "A" in the column "Subject sequence – Classes" (see example).




| L-No. | Cl,Te. | Per | Teacher | Subject | Class | Subject room | Home Room | Double | Block | SS Cla. |
|---|---|---|---|---|---|---|---|---|---|---|
| 37 | 3, 7 | 1 | Callas | CH | 2a,2b | | R2a | | | |
| 59 | 2, 2 | 2 | Ander | DS | 3a,3b | PL | R3a | 1,1 | | |
| 62 | 2, 2 | 3 | Arist | PEG | 3a,3b | SH2 | R3a | 1,1 | | |
| 63 | 2, 2 | 2 | Callas | AR | 3a,3b | | R3a | 1,1 | | |
| 55 | | 4 | Gauss | MA | 3a | | R3a | | | |
| 56 | 1, 2 | 2 | Gauss | GA | 3a | | R3a | 0,1 | | |
| 57 | | 2 | New | PH | 3a | Gym | R3a | | | |
| 58 | | 2 | Hugo | GEc | 3a | | R3a | | | |
| 60 | | 4 | Ander | DE | 3a | | R3a | | | |
| 61 | | 1 | Ander | DS | 3a | PL | R3a | | | |
| 64 | | 2 | Nobel | RE | 3a | | R3a | | | |
| 65 | | 2 | Rub | HI | 3a | | R3a | | | |
| 98 | | 2 | Rub | FR | 3a | | R3a | | | A |
| 66 | | 3 | Cer | EN | 3a | | R3a | | | A |
| 67 | | 2 | Cer | BI | 3a | | R3a | | | |
| 97 | | 2 | Nobel | SP | 3a | | R3a | | | |
| 99 | | 2 | Cer | CHp | 3a | | R3a | | | |
| 100 | | 2 | Curie | PHp | 3a | | R3a | | | |
| 101 | | 2 | Gauss | EL | 3a | | R3a | | | |
| 102 | | 2 | New | DR | 3a | | R3a | | | |

To ensure the correct treatment of subject sequences during optimisation, enter the following details:

Under "Scheduling | Weighting | Teachers"

- Respect subject sequence - Teachers

and/or

Under "Scheduling | Weighting | Classes"

- Respect class sequence - Classes

Under "Scheduling | Weighting | Subjects"

- Subject sequence (classes or teachers)

or

Under "Lesson"

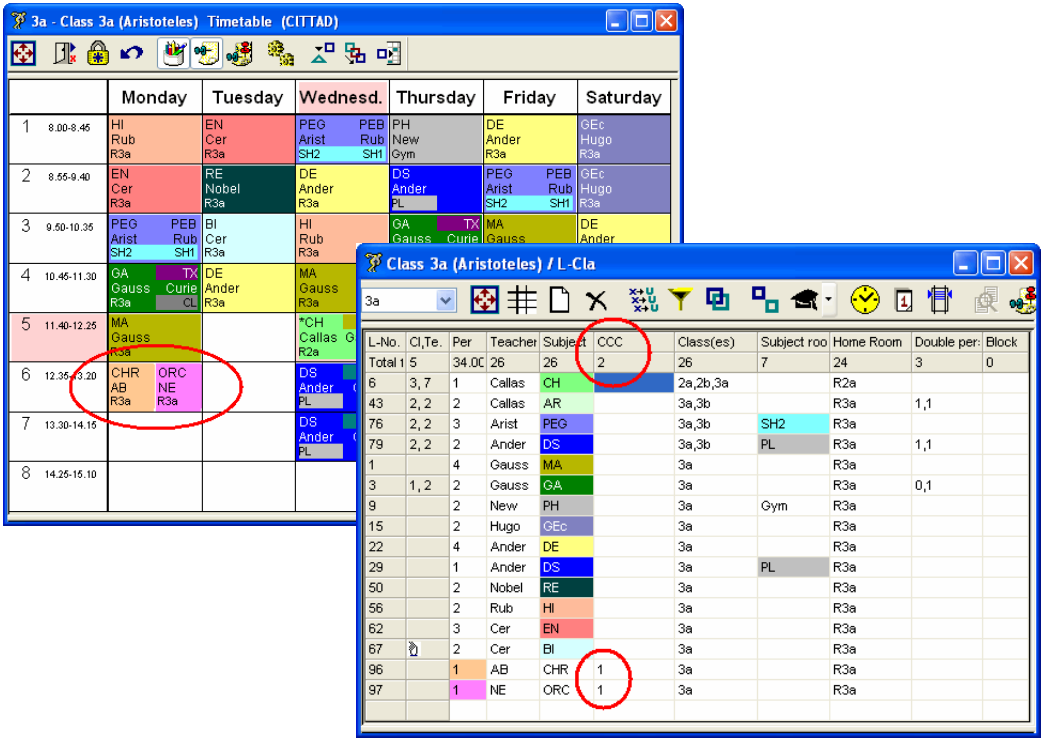
- Subject sequence (classes or teachers)

## Class Clash Code (CCC)

Teachers, classes and rooms should never be double booked. A possible exception are lessons attended by only some of the students of a class.

**Example 1**

The students of class 1a attend **either** Choir **or** Orchestra, but none of the students attend both. Enter the same numerical CCC for both lessons (permitted values 1 - 9), e.g. "5" to instruct the gp-Untis optimisation algorithm that the lessons Choir and Orchestra may be scheduled at the same time, but that this is not compulsory (see example on the following page).




**Example 2**

There are three subject groups. Each student chooses one of the groups and attends all the lessons offered within this group. Conflicts between the individual groups are therefore permissible. Assign the same CCC letter to all lessons that must not be in conflict with other lessons. Assign a different CCC letter to all lessons where conflicts are permissible.

| | Subjects | CCC |
|---|---|---|
| **Group 1** | French and Italian | A |
| **Group 2** | Chemistry and Physics | B |
| **Group 3** | Literature and Drama | C |

**Note**

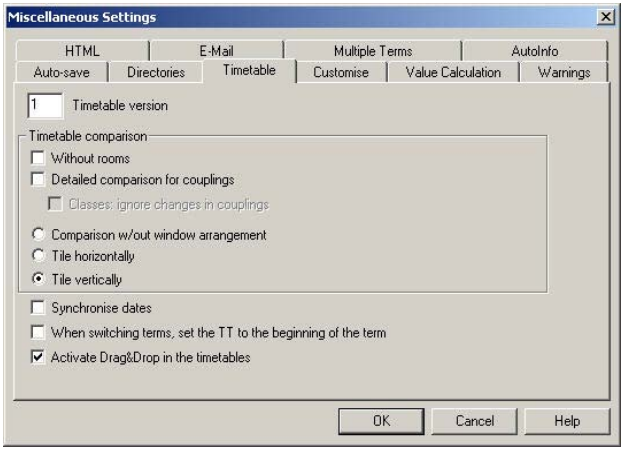
Please note that entering a CCC *permits*, but does not *enforce* the creation of a conflict between lessons. Consequently, the diagnosis tool will **not** display a NTP for classes when the lessons marked with the class conflict symbols A, B and C are **not** scheduled at the same time.

## Timetable comparison

It is often useful and necessary to compare timetables with each other, for instance when you implement manual changes or when you want to compare different versions of your timetable after the completion of several optimisation runs. For this purpose, gp-Untis provides the function "Timetable comparison" described in this chapter.

First, the chapter will introduce a number of settings options relevant for timetable comparisons.

Under "Settings | Miscellaneous", open the settings dialogue and select the "Timetable" tab. Here you will find an input block with different settings for comparing timetables.




Settings options for timetable comparisons

The following settings options are available:

**Without rooms**

Tick this box if you want the software to ignore individual rooms during the timetable comparison.

**Detailed comparison for couplings**

Activate this option if you only want to see the timetable differences for the elements of the selected coupling row, but not for all the elements of the selected lesson.

**Classes: ignore changes in couplings**

This option is only available when the previous option is active. If the timetable changes involve classes only, the changes are only displayed on the class timetables of the classes affected by the changes.

During a timetable comparison, gp-Untis is started a second time. The next three settings concern the arrangement of the two windows.

**Comparison without window arrangement**

Select this option if you want to arrange the two windows manually.

**Tile horizontally**

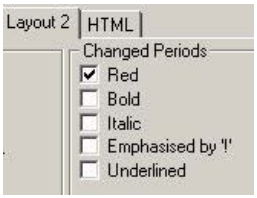
Select this option if you want gp-Untis to arrange the original timetable at the top and the modified version at the bottom.

**Tile vertically**

Select this option if you want gp-Untis to arrange the original timetable on the left and the modified version on the right.

The selected window arrangement is not fixed and you can manually change the arrangement at any time. As soon as you close the second window, the original gp-Untis timetable reverts to its former state (e.g. full screen).

If you have two monitors connected to your computer (Windows 98 or later), you can display the two versions on two separate screens.




Another settings option allows you to specify how the differences between the two versions should be displayed. Open a timetable (e.g. "Timetable | Classes"), click on <Timetable Settings> and open the "Layout 2" tab to view and select different display options.

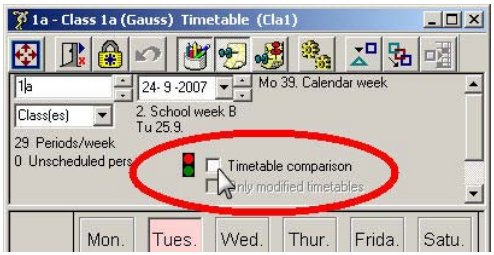
The <Timetable Settings> button can only be activated when no timetable comparison is active.



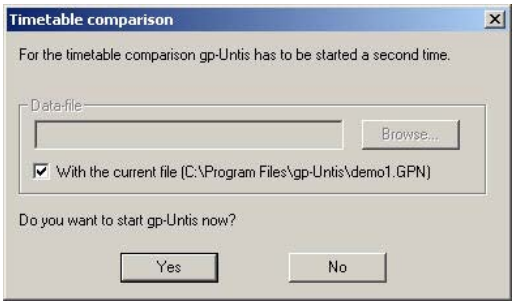

For purposes of clarity and to allow the highlighting of periods found to be "different", the normal timetable highlights and colour codes will be suppressed.

Start a timetable comparison as follows:

Open a timetable (e.g. "Timetable | Classes") and, if necessary, enlarge the upper part of the window – the details window – until the combo box "Timetable comparison" becomes visible. Activate the function by ticking the box.




The timetable comparison dialogue window will appear and instruct you to start gp-Untis a second time. Specify if you want to open the current file a second time or if you want to open a different file.



The following list summarises the different items you can compare:

- Different files, i.e. timetables saved under different names
- Different school weeks (of the same file). Open the same file in both gp-Untis versions and select two different weeks from the timetable display
- Different terms of the same file (for use with the *Multiple Term Timetable* module)
- Changes to the current work file since the file was last saved

**Note**

The second timetable must have the same format and the same number of columns and rows as the first (an important factor when comparing timetables from different files).

Select the desired option and click on <Yes> to start gp-Untis a second time. The two versions will be arranged as specified. You may have to move the navigation bar to the bottom or the right window edges to be able to view the entire timetable. The second version also displays a timetable.




**Inactive**



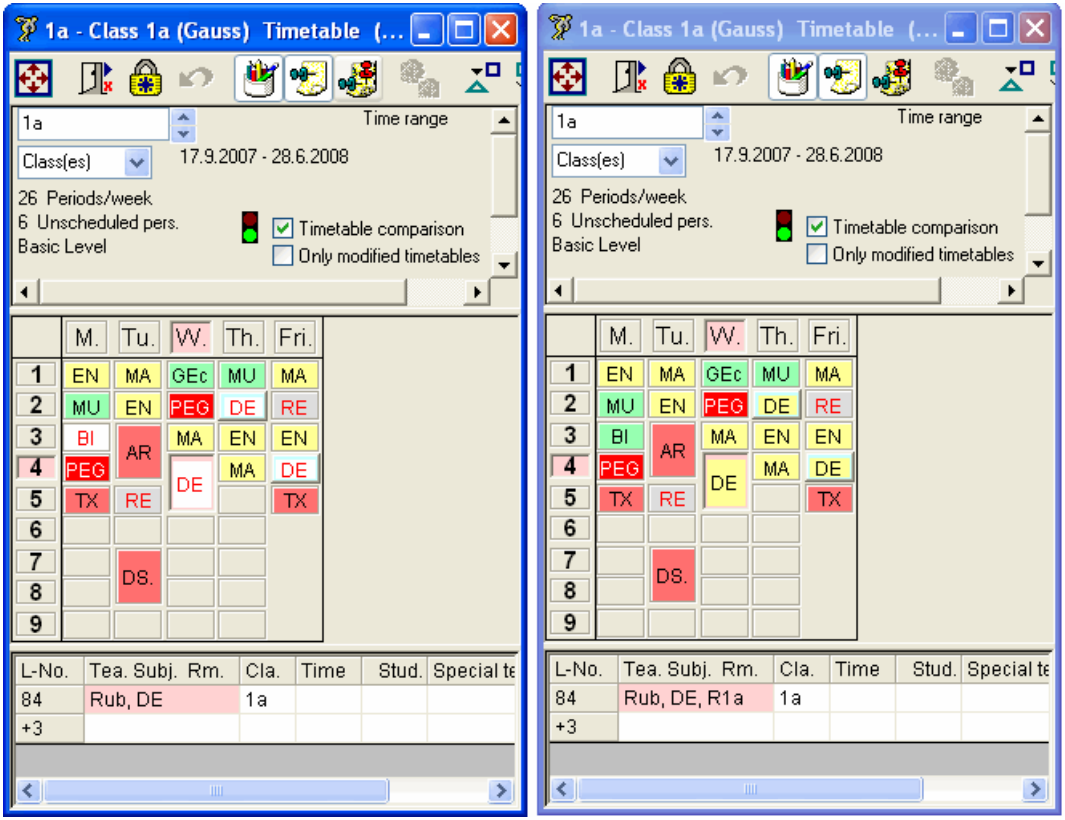

**Active**

The two timetable versions communicate with each other and exchange information. During this process, the traffic light situated next to the timetable comparison combo box is green.

When the timetable comparison function is active, the two timetables are synchronised. This means that you can scroll from class to class in one of the two timetables, and the other timetable automatically scrolls to the same class. Move the cursor from period to period and the second timetable will always display the same period.

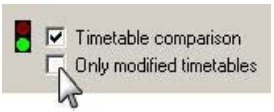
**Example**

The example on the following page shows an active timetable comparison. The RE lesson is highlighted because it is scheduled for different periods (left, Wed-6; right, Tue-5).




All four periods of German are also highlighted, the reason for which is shown in the period details window in the bottom part of the window: In contrast to the timetable on the left, the timetable on the right shows that a room has been allocated to the lesson. The room difference would not be displayed if the setting "Without rooms" had been activated.

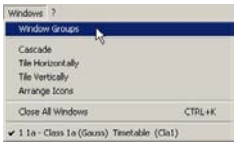
Below the combo box "Timetable comparison", you will see another combo box entitled "Only modified timetables". This function can only be activated when a timetable comparison is active. Ticking this box automatically activates the function in both timetables. gp-Untis proceeds to compare all the timetables of the selected element and displays a message box showing the number of timetables in



both versions that contain differences. Close the message box by clicking on <OK>. When this function is active, you can only scroll through timetables that contain changes. Timetables with identical contents are no longer displayed.

The function "Timetable comparison" allows you to compare the following timetable formats:

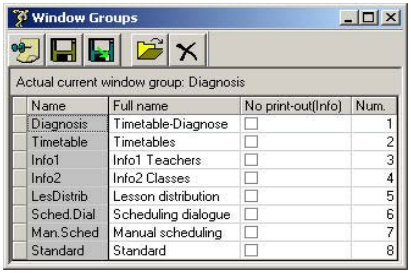
- Single timetables, i.e. two timetables of format 01 or 10, are usually displayed side by side.
- Comprehensive overviews, i.e. two timetables with format 20 or 30, provide an overview of the timetables of the entire school.




## Window groups

Different timetabling tasks often require the instant availability of very different types of data. When assigning teachers to lessons, for example, you may find that an open scheduling dialogue is more a hindrance than a help. Equally, the presence of a weighting window on screen would unnecessarily clutter up the screen when all you are trying to do is some manual fine-tuning of the timetable.

**Window Groups** gp-Untis solves this problem with the "Window Groups" function that allows you to set up the screen for a specific timetabling task and save the window position so you can call it up again at a later point in time.




| Name | Full name | No print-out(Info) | Num. |
|---|---|---|---|
| Diagnosis | Timetable-Diagnose | ☐ | 1 |
| Timetable | Timetables | ☐ | 2 |
| Info1 | Info1 Teachers | ☐ | 3 |
| Info2 | Info2 Classes | ☐ | 4 |
| LesDistrib | Lesson distribution | ☐ | 5 |
| Sched.Dial | Scheduling dialogue | ☐ | 6 |
| Man.Sched | Manual scheduling | ☐ | 7 |
| Standard | Standard | ☐ | 8 |

Open the "Window Groups" function via the window menu of the main menu or via the button <Window Groups> on the main tool bar. This window also allows you to assign individual window groups to one of the 9 buttons on the "Window Groups" tool bar.



# Glossary

**Alternative room** - You can define a (functionally equivalent) alternative room for each room in the school. Depending on the weighting settings, the software programme can allocate the alternative room instead of the designated lesson room.

**Block (period block)** - As a rule, gp-Untis treats lessons as single periods. Several periods of the same lesson scheduled consecutively constitute a lesson block. The desired size of the block can be entered under lessons.

**Blocked periods** - When individual elements are unavailable for scheduling at certain times, the periods or half-days in question can be blocked with the time request „-3“. Examples include rooms that are not available at certain times, teachers employed at more than one school and vocational college classes who do not attend lessons every day of the week.

**Context menu** - The context menu is a pop-up element that appears when right clicking the mouse button. Use the context menu to open certain windows in the *Cover Planning* module and to carry out specific functions such as copying.

**Core time** - Periods marked with the time request „+3“ when a lesson *must* be scheduled for a particular element.

**Coupling** - Coupled lessons (couplings) are lessons containing more than one element of the same type. Couplings can apply to teachers and classes. The main characteristic of coupled lessons is that all associated elements are scheduled at the same time.

**Cover mode** - A synonym for working with the functions offered by the *Cover Planning* module – compare Untis mode (the functions offered by the standard gp-Untis software package).

**Double period** - Two subject periods taught in consecutive periods by the same teacher to the same class.

**Element** - The main term for the data sets of teachers, classes, subjects and rooms.

**Element-Rollup** - The element rollup accessible via the dedicated button on the main tool bar allows simple data input via Drag&Drop or double click.

**Home room** - The room (of a teacher or a class) where the lessons should be scheduled, if possible.

**Ignore** - Lessons marked ignore will be ignored by the optimisation and the scheduling tools.

**Lesson** - In gp-Untis, lessons are the combination of teacher, class, subject and room. Lessons can take place once or several periods per week.

**Locked periods** - Periods that have been manually placed on the timetable and locked to prevent the optimisation tool from moving them to a different slot.

**Locking lessons** – When a certain lesson on a timetable should not be changed by subsequent optimisation runs, the lesson can be locked by ticking the relevant box in the master data or lesson window or by selecting the lesson in the scheduling dialogue or on the scheduling timetable.

**Module** - The standard gp-Untis software package can be extended with a number of additional modules offering special functions. The following additional modules are currently available: *Multi-Week Timetable, Department Timetable, Student Timetable, Minute Timetable, Lesson Planning & Value Calculation, Multiple Terms Timetable, Info-Timetable* and *Cover Planning*.

**NTP -Non Teaching Period (window period, non contact hour)** - As a rule, NTPs are undesirable free periods for teachers and classes scheduled in the middle of a half-day.

**Off-site location** - A building of a school is considered off-site when it is not possible to walk from the main school building to the off-site building in the space of a normal break. Off-site locations are marked with off-site codes and receive special attention by the software.

**Optional subject** – Lesson periods not attended by all the students of a class. To enable students with free periods to come to school later or leave the school earlier than normal hours, free periods are preferentially scheduled at the beginning or end of half-days. An associated term is *fringe period subject*. Free and fringe period subjects can have different weighting settings.

**Single period** - A subject taught no more than once a day to one particular class.

**Subject room** - A room in which particular lessons should preferentially be taught, e.g. the music room for teaching music.

**Untis mode** - A synonym for working with the *Timetable* module – compare Cover mode (working with the *Cover Planning* module).

**View** - In gp-Untis, every window with a data display is a view. Please see section „The master data views“ on p.26 for details on how to modify views (searching, sorting etc.).

# Index

## Symbole

&
  scheduling dialogue 166
(2) subject more than once/day 67, 96
(A) in all classes 66
(B) lock conditionally 95
(D) respect double periods 67, 95
(E) double periods span *-breaks 68, 94
(F) fringe period 67
(F) lessons not on adjacent days 61
(G) not in a fringe period 67, 94
(H) schedule a.m or p.m., not both 61, 65
(k) exempt from data-analysis 94
(K) no alternative room to be used 94
(L) not in legend 97
(L) lunch break = NTP 61, 65
(M) main subject 66
(m) marked 93
(O) optional subject 67, 94
(P) NTPs allowed 61
(r) all periods in the same room 94
(S) schedule class group later 96
(U) p.m. only double periods 97
(V) variable teacher 96
(X) locked 93
(Y) keep current loading pattern 61, 65
* scheduling dialogue 166
+3. *Siehe* time requests

## A

abbreviations
  printing a legend 246
afternoon pers./week [min,max] 68
alias (second name) 58, 63
  in the period window 228
alias name 66, 89
Alt. HRm 162
Alt.-Rm. 162
alternative room 56
assess the active time slot
  scheduling dialogue 184
auto-size
  for the details window 233

## B

background
  printing a background picture 249
block
  period block 307
    weighting 115
  saving a block 152
block size 91
break supervisions
  in the tt 228

## C

C
  no single periods 95
Cap.
  capacity 162
capacity
  room- 57
CCC-analysis 119, 119–146
chained swaps
  scheduling dialogue 196
Cla
  layout 214
clash
  class-clash
    scheduling dialogue 176
  room-clash
    scheduling dialogue 177
  teacher-clash
    scheduling dialogue 177

Class Clash Code 92
class groups 59
class level 59
class teacher 239
Class(es)
  input field - lessons 88
clip board 98
clipboard 255
cluster (simultaneous lessons)
  in the tt period window 228
colour
  lessons 86
  master data 52
colour codes
  in the tt 235
column headings
  in the tt 235
combined class names
  (2a,2b -> 2ab) 230
comprehensive tt-overviews 306
consecutive swaps
  scheduling dialogue 193
control data
  optimisation 127–146
copy&paste
  master data 98
  timetables 255
core time 264, 307
corridor 57
coupled lessons 222
coupling 308
  label with a dot in the tt 230

## D

D
  respect double periods 95
daily fringe period 64
  weighting 108
data analysis 125–146, 141
date range 206
delete
  a row - sched. dia. 187
  elements 44
  the timetable 146
deleting periods
  in the scheduling dialogue 160, 174
  in the scheduling timetable 160
  in the timetable 153
department 57, 59, 63
  printing the dept. in the header 239
  printing the tt's of a whole dept. 242
description 54, 70
  in the tt period window 227
  in the tt selection window 207
  printout in the header 238
details
  individual timetables 242
  print-outs overview tt's 246
details window 210
  scheduling dialogue 164
diagnosis 140–146
display functions
  scheduling dialogue 187
displaying
  a second lesson - sched. dia. 187
  alternative rooms - sched. dia. 181
division number 89
do not print empty rows 241
Don't Print (N) 55
double period 67, 68, 91
double periods
  like single periods 230
drag&drop
  scheduling dialogue 178

## E

E
  double periods are allowed to span *-breaks 94
element
  change name 44
Element-Rollup 22
  activate double click 23
  update elements 23
exporting data
  via the clipboard 99
exporting views 254

## F

first name 62
fixed (constant) text 240
flags (markers)
  schduling dialogue 166
footer 250
  tt-printouts 250
footnote reference 222
fringe periods 296
full name 54
  in the tt period window 226

## G

G
  no fringe period placement 94

## H

half periods
  scheduling in the sched. dia. 200, 201
header 250
headings
  printing 237
home room 59, 64, 89
HTML 252
  index with full names 233

## I

i
  ignore 93
Ignore (i) 55
Information
  scheduling dialogue 168
input field 206
  scheduling dialogue 164
intermediate headings
  overview timetables 247
inverse 242

## K

K
  no alternative room to be used 94

## L

layout 240
  of fields 240
  of the fields in the period window 225
Layout 1
  timetable-settings 229
Layout 2
  timetable-settings 230
legend 244
  overview timetables 247
lesson 245
lesson colour-codes
  scheduling dialogue 188
lesson group 89
lesson groups
  in the period window (tt) 227
lesson numbers
  in the period window (tt) 226
lesson search
  in the scheduling dialogue 164
lesson table (syllabus) 58
lessons
  couple 85

de-couple 85
lock
element (tt) 213
type (tt) 212
lock (X) 55
lock period
in the scheduling dialogue 157
lock periods
in the scheduling timetable 157
in the timetable 149
locking lessons 308
locking the view
in the scheduling dialogue 170
lunch break 65
min, max 60, 64
teachers 108
weighting 108, 109

## M

m
marked 54, 93
manual
scheduling 146, 256
in the tt 146
master class
(tt print-out) 62
master data text 207
max Main Subj. pers./day 60
max periods/day 66
max. consec. Main Subj. pers./day 60
max. consec. periods 66
max. consec. periods/half day 64
module 309

## N

name
of an element 53
no NTPs 65
NTP
non teaching period 309
NTPs
for classes
weighting 109
min,max 64

## O

O 166
in the scheduling dialogue 166
off-site buildings 57
optimisation
increase percentage by 129
level 128
scheduling dialogue 182
optimistaion
different strategies 132–146
optional subject 110
weighting 110
optional subjects 296
overall diagnosis 144–146

## P

page setup 248
period availability
scheduling dialogue 165
period window
tt 220
periods in this subject room 91
periods/day min,max 64
periods/week 88
in the tt selection window 208
periods/week min,max 69
personnel number 63
predefined layouts 214
previous year's name 58
printing 237
A3 248
all elements 19
all timetables 241
background picture 249

black & white 233, 241
master data 19
master data views 39
number of rows/cols. per page 246
selected (marked) tt's 241
timetable
(L) Not in legend 97

## R

replace teacher
scheduling dialogue 185
resize
the window 208
room
swapping rooms
scheduling dialogue 180
room allocation
manual 153
scheduling dialogue 160, 180
timetable 153
room availability
scheduling timetable 157
timetable 148
room capacity 280
room weight 56

## S

S
schedule class group later 96
scheduling period blocks
scheduling dialogue 173
scheduling periods
in the scheduling dialogue 172
in the scheduling timetable 155
in the timetable 146
scheduling priority 92
school data 257
second name 58, 63
selecting timetables 241
selection window 206
serial change 84
settings 87
one week 87
scheduling dialogue 188
single periods
weighting 107
single timetables 306
sort periods
(tt - Layout 2) 231
sorting 14
columns 14
master data 49
master data elements 32
special functions
'all elements'-window 21
special text
in the details window (tt) 211
in the periods window (tt) 227
standard layout 213
start time graduation 291
statistical code 54, 90
students 90
female 90
in the details window 211
number of students in the period window (tt) 228
subject 88
subject group 66
subject room 68
subject sequence 297
classes 69, 92
negative 298
positive 297
teachers 69
swap suggestions
scheduling dialogue 191
swapping periods
in the scheduling timetable 157
in the timetable 152
in the timetalbe 150
scheduling dialogue 190

## T

teacher
  status 63
term 240
text 54, 90
  in the heading of print-outs 238
time
  in the tt details window 210
time range 240
time requests 21, 51
  copy&paste 263
  deleting 263
  in the scheduling dialogue 165
  in the tt period window 227
timetable
  a.m/p.m division line 232
  comparison 301, 301–306
  highlighting changed periods 233
  in menu 213
  layout 1 214
  layout 10 215
  layout 11 215
  layout 20 217
  layout 30 217, 218
  layouts 213
  new view 219
  nr. of timetables per page 242
  predefined layouts 214
  row headings 236
  several classes on one timetable 251
  timetable comparison 207
  window 208
timetable comparison 301–306
timetable interaction 211
title 62

## U

undo
  manual scheduling 163, 180
unlocked timetables 212
user-defined views 219

## V

V
  variable teacher 96
view 309
views
  import/export 254

## W

window
  set-up 205
window in the background
  in the scheduling dialogue 170

## X

X 166
  in the scheduling dialogue 166
  in the scheduling timetable 155
  locked 93
x 166
  in the scheduling dialogue 166
  in the scheduling timetable 155



GRUBER & PETTERS SOFTWARE

A-2000 Stockerau, Belvedereregasse 11 • ++43/2266/62241-0 • office@grupet.at • www.grupet.at